iii. Two 1 m long m.s. plates of 10 mm thickness are to be welded by a lap joint with 6 mm electrode. Calculate the cost of welding. Assume following data: **5**

(a) Current used	= 250 amperes
(b) Voltage	= 30V
(c) Welding speed	= 10 m/hr
(d) Electrode used	= 0.4 kg/m of welding
(e) Labour charges	= Rs. 40/hr
(f) Power Charges	= Rs. 0.2/kWh
(g) Cost of Electrode	= Rs. 5/Kg
(h) Efficiency of machine	= 60%

Q.5 i. Explain the term 'Indirect Expenses'. State and explain various Indirect Expenses. **4**

ii. A lathe was purchased for Rs. 45,000/- on 1st January 1998, the erection and installation cost were Rs. 7,000/-. It was replaced by a new one on 1st January 2018. If the scrap value was estimated as Rs. 15,000/- what should be the rate of depreciation and depreciation fund on 15th June 2007. **6**

OR iii. An industrial plant with initial value of Rs. 2,00,000/- and the salvage value of Rs. 20,000 at the end of 10 years but it sold for Rs. 1,45,000 at the end of 10 years. What is the profit or loss if sinking fund depreciation method at 8% compounded annually was adopted? **6**

Q.6 Attempt any two:

i. Write formula for calculating volume of a frustum of cone and a prism. **5**

ii. Write down formulas to calculate area of irregular figures by Trapezoidal rule and the Mid-ordinate method. **5**

iii. Write formula for calculating area of sector and a hexagon. **5**

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

OE00007 Mechanical Estimation & Costing

Programme: B.Tech. Branch/Specialisation: All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. A helpful technique, for accurate forecasts about costs to be incurred in future is a part of **1**

(a) Unit estimation (b) Production estimation
(c) Cost estimation (d) Price estimation

ii. An estimator should be **1**

(a) An engineer
(b) Acquainted with manufacturing process
(c) Acquainted with sketch and machine drawings
(d) All of these

iii. Cost, which is related to specific cost object and economically traceable, will be classified as _____ **1**

(a) Direct cost (b) Indirect cost
(c) Line cost (d) Staff cost

iv. Cost that has elements of variable and fixed costs at same time is **1**

(a) Variable cost (b) Mixed cost
(c) Semi variable cost (d) Both (b) and (c)

v. Process of material removal from the surface at right angle to the axis of rotation of the job is called as ____ **1**

(a) Drilling (b) Facing (c) Turning (d) Reaming

vi. Sheet metal is broken down into the following five phases: Planning and layout, fabrication, assembly, repair/maintenance, and _____. **1**

(a) Design (b) Structure (c) Cost (d) Installation

vii. Old machine becomes out of fashion and uneconomical due to the new better machine is known as _____ **1**

(a) Idleness (b) Obsolescence
(c) Depreciation (d) None of these

P.T.O.

viii. The process of bringing the defective machine into efficient working condition is called _____ **1**
(a) Repair (b) Maintenance
(c) Both (a) and (b) (d) None of these

ix. Find the area of a parallelogram with base 24 cm and height 16 cm. **1**
(a) 192 cm^2 (b) 262 cm^2 (c) 384 cm^2 (d) 131 cm^2

x. The length of a rectangular plot is thrice its breadth. If the area of the rectangular plot is 867 sq m, then what is the breadth of the rectangular plot? **1**
(a) 17 m (b) 8.5 m (c) 34 m (d) 51 m

Q.2 i. Enlist any four advantages of Standard Cost. **2**

ii. What can be the sources of errors in estimating? **3**

iii. List the qualities and functions of an 'Estimator'. **5**

OR iv. How the Cost of a product is controlled? **5**

Q.3 i. How material cost is calculated? **2**

ii. Prepare a statement giving the following information: **8**
(a) Material cost (b) Prime cost
(c) Factory cost (d) Office cost
(e) Selling overheads (f) Total cost
(g) Net Profit

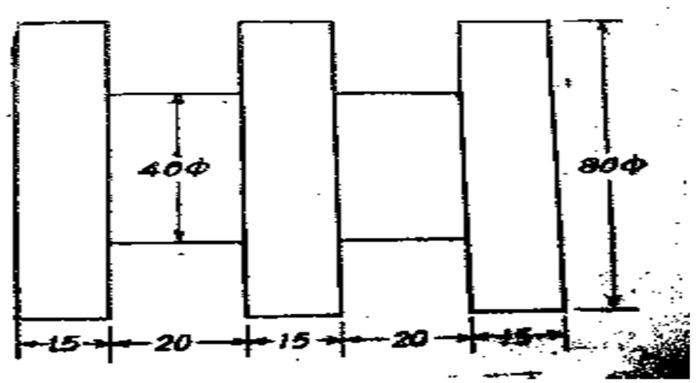
Refer following data for the financial year 2017-2018
(a) Stock of Material on 1st April 2017 = Rs. 5,00,000/-
(b) Material Purchased = Rs. 34,00,000/-
(c) Office Salaries = Rs. 50,000/-
(d) Rent, taxes and insurance of factory = Rs. 1,00,000/-
(e) Pay and commission to salesmen = Rs. 1,00,000/-
(f) Depreciation of office equipment = Rs. 2000/-
(g) Wages to labour (Direct labour cost) = Rs. 25,00,000/-
(h) General Administrative expenses = Rs. 34,000/-
(i) Water and power for factory = Rs. 90,000/-
(j) Sale of product = Rs. 90,00,000/-
(k) Works Managers salary = Rs. 1,50,000/-
(l) Salary of office staff (also executives) = Rs. 6,00,000/-
(m) Depreciation of the plant = Rs. 80,000/-
(n) Material transportation = Rs. 20,000/-

(o) Water and power for office = Rs. 30,000/-
(p) Rent, taxes and insurance of office = Rs. 15,000/-
(q) Repair and maintenance of plant = Rs. 50,000/-
(r) Direct expenses = Rs. 5000/-
(s) Stock of Material on 31st March 2018 = Rs. 4,50,000/-

OR iii. A Factory owner employed 50 workers during the month of April 2017, whose detailed expenditures are given below: **8**
(a) Material cost = Rs. 3,00,000/-
(b) Rate of wages for each worker = Rs. 50/hr
(c) Duration of work = 8 hours/day
(d) No. of holidays in the month = 5 days
(e) Total overhead expenses = Rs. 1,50,000/-
If workers were paid overtime of 400 hours at the rate of Rs. 75/hr. Calculate:
(a) Total Cost (b) Man hour rate of overheads.

Q.4 Attempt any two:

i. The shaft shown in below mentioned figure is to be manufactured by turning out of 85 mm steel rod. Find out the minimum machining time if the job is to be turned at 3000 rpm with feed 0.5 mm/rev and depth of cut 3 mm. **5**



ii. Cylindrical drums of size 1.5 m high and 1 m mean diameter are to be fabricated from sheet of 5 mm thick by grooved seam joint and both the covers should be jointed with single seam joint. Calculate the material cost, if sheet is available at Rs. 15/m^2. **5**

P.T.O.

Marking Scheme
OE00007 Mechanical Estimation & Costing

Q.1	i.	A helpful technique, for accurate forecasts about costs to be incurred in future is a part of (c) Cost estimation	**1**
	ii.	An estimator should be (d) All of these	**1**
	iii.	Cost, which is related to specific cost object and economically traceable, will be classified as _____ (a) Direct cost	**1**
	iv.	Cost that has elements of variable and fixed costs at same time is (c) Semi variable cost	**1**
	v.	Process of material removal from the surface at right angle to the axis of rotation of the job is called as ____ (c) Turning	**1**
	vi.	Sheet metal is broken down into the following five phases: Planning and layout, fabrication, assembly, repair/maintenance, and _____. (a) Design	**1**
	vii.	Old machine becomes out of fashion and uneconomical due to the new better machine is known as _____ (b) Obsolescence	**1**
	viii.	The process of bringing the defective machine into efficient working condition is called _____ (c) Both (a) and (b)	**1**
	ix.	Find the area of a parallelogram with base 24 cm and height 16 cm. (c) 384 cm^2	**1**
	x.	The length of a rectangular plot is thrice its breadth. If the area of the rectangular plot is 867 sq m, then what is the breadth of the rectangular plot? (a) 17 m	**1**
Q.2	i.	Any four advantages of Standard Cost. 0.5 mark for each advantage (0.5 mark * 4)	**2**
	ii.	Three sources of errors in estimating 1 mark for each source (1 mark * 3)	**3**
	iii.	Five qualities and functions of an 'Estimator' 1 mark for	**5**
OR	iv.	Cost of a product is controlled 1 mark for each method (1 mark * 5)	**5**
Q.3	i.	Material cost is calculated Calculation of volume and Scrap volume 1 mark Unit rate 1 mark	**2**
	ii.	Prepare a statement giving the following information: (a) Material cost 1 mark (b) Prime cost 2 marks (c) Factory cost 1 mark (d) Office cost 1 mark (e) Selling overheads 1 mark (f) Total cost 1 mark (g) Net Profit 1 mark	**8**
OR	iii.	Calculate: (a) Total Cost 5 marks (b) Man hour rate of overheads. 3 marks	**8**
Q.4		Attempt any two:	
	i.	Find out the minimum machining time Tm_1 1 mark Tm_2 2 marks Tm_3 2 marks	**5**
	ii.	Volume of material 3 marks Calculate the material cost 2 marks	**5**
	iii.	Power cost 2 marks Material Cost 1 mark Labour Cost 1 mark Calculate the cost of welding 1 mark	**5**
Q.5	i.	Definition of 'Indirect Expenses' 2 marks Various Indirect Expenses 2 marks	**4**
	ii.	Rate of depreciation 3 marks Depreciation fund on 15th June 2007 3 marks	**6**
OR	iii.	Depreciation fund 2 marks Depreciation rate 2 marks Profit or loss 2 marks	**6**

Q.6		Attempt any two:		
	i.	Formula for calculating		**5**
		Volume of a frustum of cone	3 marks	
		Volume of a frustum of prism	2 marks	
	ii.	Trapezoidal rule	2.5 marks	**5**
		Mid-ordinate method.	2.5 marks	
	iii.	Formula for calculating area of		**5**
		Sector	2.5 marks	
		Hexagon	2.5 marks	