COURSE: Industrial Engg

VERSION:

CODE (15) 5022

BLUEPRINT

Sl. No.	Module	Type of Questions							
		Part A		Part B		Part C		Total	
		No. of Questions	Score	No. of Questions	Score	No. of Questions	score	No. of Questions	score
1	First	2	4	2	12	2	30	6	46
2	Second	1	2	2	12	2	30	5	44
3	Third	1	2	2	12	2	30	5	44
4	Fourth	1	2	1	6	2	30	4	38
Total		5	10	7	42	8	120	20	172

(80)

QUESTION WISE ANALYSIS

Course: (15) 5022 - Industrial Engg

Version:

	Qn. No.	Type of Question	Module	Objective	Score	Time in Minutes	
I	1	Short Question	I	1.2.16	2		
	2	"	II	2.2.1	2		
	3	"	III	3.2.4	2	20	
	4	"	IV	4.2.13	2		
	5	"	I	1.1.2	2		
II	1	Descriptive Question	I	1.2.12	6		
	2	"	I	1.2.20	6		
	3	"	II	2.1.4	6	30	Any 5
	4	"	II	2.3.1	6		
	5	"	III	3.1.3	6		
	6	"	III	3.2.5	6		
	7	"	IV	4.1.1	6		
III	a	Essay Type	I	1.2.6	8	5+2+3	20
	b	"	I	1.2.11	7	5+2+3	
IV	a	"	I	1.2.2	8	5+2+3	
	b	"	I	1.2.12	7	5+2+3	20
V	a	"	II	2.1.3	8	5+2+3	
	b	"	II	2.2	7	5+2+3	20
VI	a	"	II	2.2	8	5+2+3	
	b	"	II	2.1.8	7	5+2+3	20
VII	a	"	III	3.1	8	5+5+2+3	
	b	"	III	3.4.5	7	5+5+2+3	30
VIII	a	"	IV	3.2.9	8	5+5+2+3	
	b	"	III	3.2.8	7	5+5+2+3	30
IX	a	"	IV	4.2.1	8	5+5+4+1	30
	b	"	IV	4.2.5	7	5+5+4+1	
X	a	"	IV	4.1.3	8	5+5+4+1	30
	b	"	IV	4.2.9	7	5+5+4+1	

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Qn. No.	Scoring Indicators	Split score	Total score
I			
1)	Preventive, Breakdown, Predictive, Corrective Routine, Reliability Centered etc (any 4)	½ mark each	2
2)	Observed time, Rating factor, Relaxation allowance Contingency and Interference allowance, Policy allowance	(½) each	2
3)	Most of the observation in the distribution of Sample data tend to Concentrate in the Centre of the distribution. This characteristic is known as Central tendency	2	2
4)	Design time, Drafting time, Method study Time study, Design and manufacture of Special tools, Experimental work, Material labour and overhead, Miscellanous allowance (any 4)	(½ each)	2
5.	Production is the transformation of inputs to desired output.	1	2
	Productivity = $\frac{\text{Output}}{\text{Input}}$	1	

Scoring Indicators

Code :

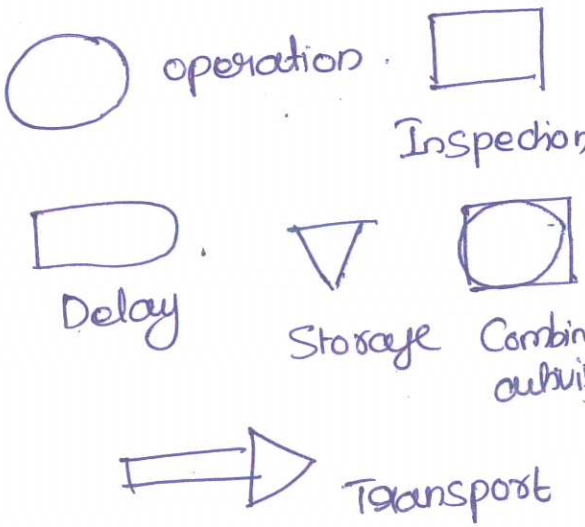
Version:

Qn. No.	Scoring Indicators	Split score	Total score
II			
1)	Advantages - Continuety en operation Less material handling (Any 2) Maximum flexibilety Multiple projects can be handled	2	6
	Disadvantages - Expensive (Any 2) High Skilled labourer requred Low utilizaton of Labour & Machenory. High equipment Cost	2	
	Application - Ship building / repair (any2) Aircraft manufacturing Pressure Vessel Manufactuing	2	
2)	Maintenance Requered Material Path of travel Type of building (Any Six) Space available Capacity Type of Production Cost Life of Equipment	1 mark each	6

Scoring Indicators (3)

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
II			
3.	Graphical representation of Sequence of Operations and inspections taking place in a process.	2	6
	Example 4		
	Any example of Chart with these symbols 		
4.	Advantages : Simultanous study of Several Operatoos No timing equipment Longer Cycles can be studeed with fewer observation Less costly	Any 3 -3 marks	6
	Disadvantages Not economical for short cycles Complete breakdown of time elements – not obtained Biasing No record of method employed	Any 3 3 marks	

Scoring Indicators

(4)

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
11 (5)	Incoming material Control - Procurement and Stocking of right material (Expln)	2	6
	Process Control - Procedure to evaluate maintain & improve qty Standards ~~as per~~ during manufacture (Expln)	2	
	~~Product Control~~		
	Product Control - Evaluating quality of Product	2	
(6)	Variables - Quality characteristics that Can be measured & represented using Specific units of measurement	2	6
	Eg: length, Weight, Temperature	1	
	Attributes - Quality characteristics that Cannot be measured & expressed. It Judged by Visual examination. It states whether it is acceptable or not.	2	
	Eg: Colour, Surface finish	1	
(7)	Advantages - Items Destructive during test can be inspected less Inspection fatigue Less time Low Cost Less Material handling	4 (Any four)	

Scoring Indicators

Code : (5) Version:

Qn. No.	Scoring Indicators	Split score	Total score
	Disadvantages - Sample may not be taue representative of lot.	Any 2	6
	Producers risk & Consumers risk	2	
III			
a.	Determines starting and Completion of various operations in manufacturing an item.	2	
	Internal factors		
	A) Availability of i) Equipment ii) Material iii) Machinery iv) Skilled workers	3	8
	B) EOQ		
	C) Stock of finished goods.		
	D) Process duration.		
	External	3	
	Customer demand		
	Delivery date		
	Dealer & Retailer Inventory		

Code : Version:

Qn. No.	Scoring Indicators	Split score	Total score
III b.	Value = Utility / Cost Value analysis- Organised Creative approach for efficient identification of unnecessary Cost. Systematic application of techniques to identify functions of a product and provide these functions at lowest total cost.	2	7
	Advantages - Fast Cost reduction Eliminate unnecessary functions Increased Profit Increased Value of product Use cheaper & better material	2 Any 3	
	Application Automobiles Machine tools Material handling Import Substitutes	(Any 3) 3	

Scoring Indicators

Code : 7 Version:

Qn. No.	Scoring Indicators	Split score	Total score
IV			
a.	Explain Any 4 of the following 1) Delphi method 2) Historic Estimate 3) Trend line method 4) Sales force Estimate 5) Correlation 6) Direct Survey	4x2 =8	8
b)	Suitable for 1) Job order production. 2) Expensive machinery 3) When Variety of products are to be manufactured 4) Demand is Small Machines and Services are grouped accordary to thier function and operation of Same type are performed in Same area Advantages Disadvantages		7

Scoring Indicators

8

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
V.			
a.	Select Record Examine Develop Evaluate Define Implement Maintain. } Explain the steps briefly	1 mark each.	8
b.	Work measurement – technique used to establish time taken for a qualified worker to carry out a specific job at defined level of Performance Steps – Select, Record, Examine, Measure Compile, Define, ~~(Briefly explain each step)~~ Objectives – Reduce Non productive time Develop standard data Improve Performance Prepare Sound incentive Scheme Correct loading of labour Future Planning	1 2 (Any 5) 5	7

Scoring Indicators

(9)

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
~~(a) (v)~~ V			
A. (a)	a) Obtain & record all info about job, Operation etc b) Breakdown the job to elements c) Examine the detailed breakdown to ensure effective method d) Measure with a stopwatch, the time taken by operator to perform each element e) Asses effective Speed of working f) Fend basic time from observed time g) Determine allowances h) Fend Standard time	8	8
B.	1) Definite and fixed place for tools & machine 2) They should be located close, in front of operator 3) Gravity should be used to deliver materials where ever possible 4) Location of tools & materials Such as to permit best Sequence of motion 5) Provision should be there for good vision		

Scoring Indicators

Code : (10) Version:

Qn. No.	Scoring Indicators	Split score	Total score
	6) Height of Workplace & chair to be arranged for alternate postures of Sitting & standing 7) A chair of type and height to permit good posture	(Any 7)	7
VII a.	QC / Inspection		
1.	Includes QA, Quality Circle, quality maintenance Inspection etc / 1. One of the functions in QC	(Any 4), 2 marks each	8
2.	Aims at Production of only quality Products / 2. Finds the acceptability of Products		
3.	Prevention of defects / 3. Concerned with detection of defects		
4.	Involves Corrective action / 4. No Corrective action		
5.	Controls Production process / 5. Does Not Control production process		
6.	Depends on feedback / 6. No feed back System		

Scoring Indicators

(11)

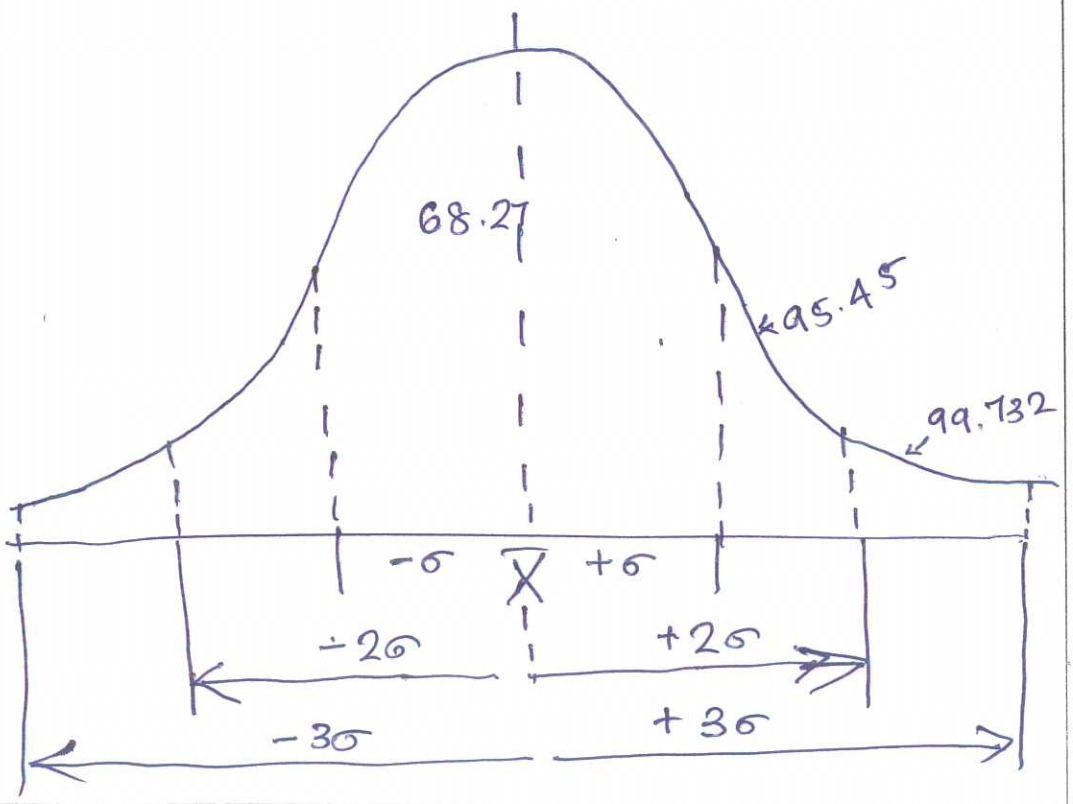
Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
VII b.	$n = 10$		
	Fraction defective: 0.11, 0.06, 0.04, 0.03, 0.10, 0.03, 0.05, 0.06, 0.08, 0.04	1	
	Mean fraction defective $= \frac{0.11 + 0.06 + 0.04 + 0.03 + 0.10 + 0.03 + 0.05 + 0.06 + 0.08 + 0.04}{10}$		
	$\bar{P} = \frac{0.6}{10} = 0.06$	1	7
	$q = 1 - \bar{P} = 0.94$		
	$\sigma_p = \sqrt{\frac{pq}{n}} = \frac{0.06 \times 0.94}{100} = .0237$		
	$UCL = \bar{P} + 3\sigma_p = 0.1311$	1	
	$LCL = \bar{P} - 3\sigma_p = -0.0111 \approx 0$		
	$\bar{P} = 0.06$.		
	Chart	3	
	Comment	1	
VIII a.	1. ND Curve is Symmetrical about its mean Value and has bell shape. fully determined by $\bar{X}$ & σ		

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
	② Theoretically ND curve extends from $-\infty$ to $+\infty$. However for practical purposes it extends from -3σ to $+3\sigma$		
	③ If estimates of $\bar{X}$ & σ of a population is obtained, estimate of probability that characteristic will fall between any pair of stated values can be calculated	3	
	④ Most Common limits $\bar{X} \pm \sigma$ — 50 % of total area $\bar{X} \pm 2\sigma$ — 68.26 $\bar{X} \pm 3\sigma$ — 95.46 $x \pm 3\sigma$ — 99.73		6
		5	

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
VIII b.	$\bar{X} = \frac{3+5+6+8+7+6+9+10+11}{9}$ Mean	1	
	Median = 3, 5, 6, 6, (7) 8, 9, 10, 11 = 7	1	
	Mode = 6 (Most repeated Value)	1	7
	Range = H − L = 11 − 3 = 8	½	
	$SD\ (\sigma) = \sqrt{\frac{\Sigma(x_i - \bar{x})^2}{n}}$	3	
	Variance = σ^2	½	
IX a.	Estimation 1. Calculation of factory cost before production 2. Estimates whether it is profitable to manufacture or not 3. Requires technical knowledge 4. Pre operation	Costing 1. Actual Cost Calculation 2. Profitability after production 3. Only clerical work 4. Post operation	8	8

Scoring Indicators

Code : 14. Version:

Qn. No.	Scoring Indicators	Split score	Total score
IX b.			

Prime cost = Direct material cost + labour cost + Expense

= 160 + 200 + 0 = 360

Factory cost = Prime cost + factory overhead

= 360 + 250 = Rs 610

Production cost = Factory cost + Office overhead

= 610

Total cost = Production cost + Selling overhead

$= 610 + \frac{30 \times 610}{100} = 793$

Selling price = Total cost + Profit

SP = TC + 0.15 (SP)

~~Profit~~ = SP

SP (1 − 0.15) = Total cost

SP (0.85) = 793

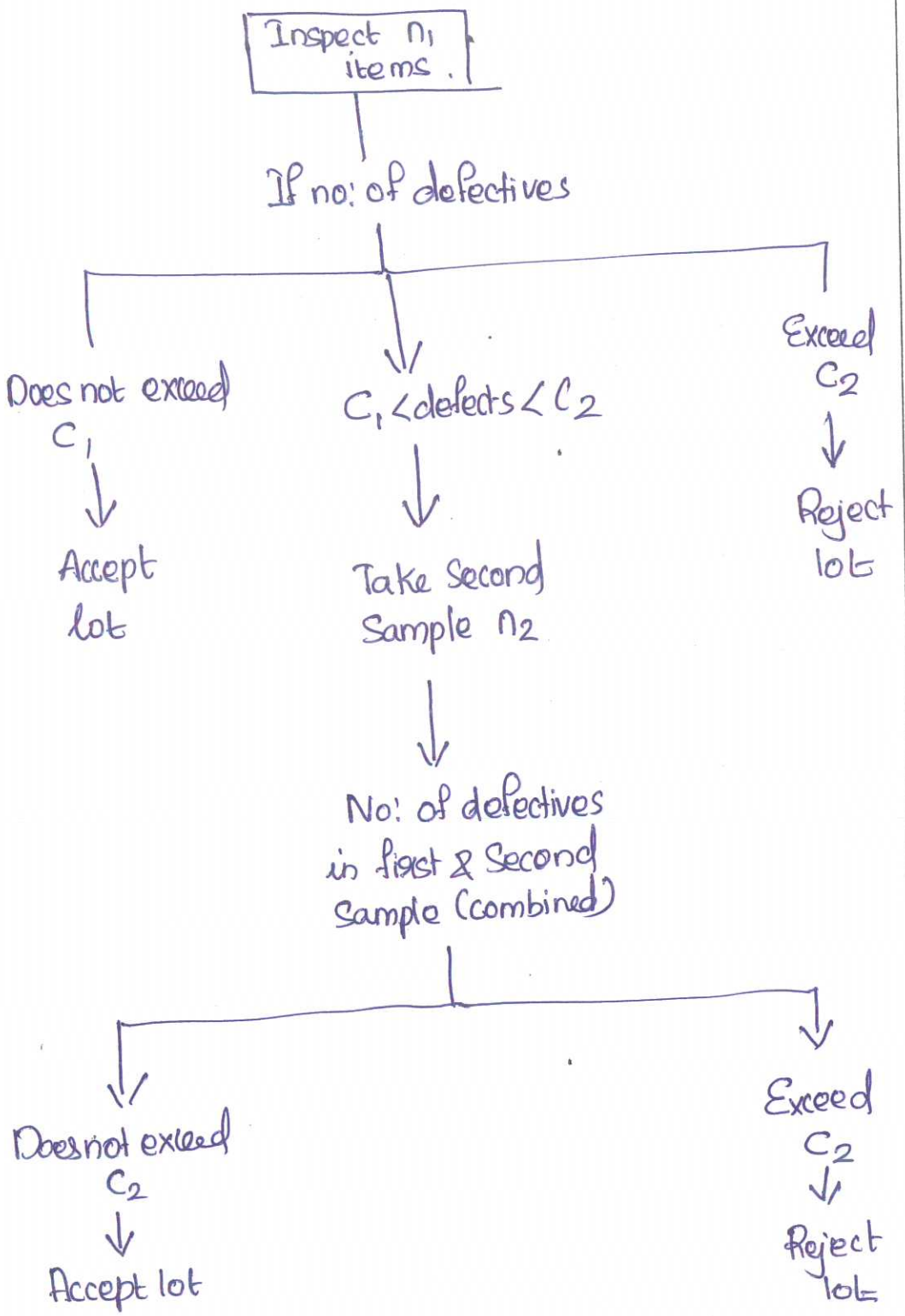
SP = 932.95

Scoring Indicators

Code :

(14)

Version:

Qn. No.	Scoring Indicators	Split score	Total score
X			
a		6	8
	Acception or rejection based on 2 Samples When the no: of defectives in first Sample exceed C_1, decision is postponed to Second Sample	2	

Importance, characteristic

Scoring Indicators

(16)

Code :

Version:

Qn. No.	Scoring Indicators	Split score	Total score
X b.	C = 40,000 , N = 5 Sum of years = 1+2+3+4+5 = 15 C − S = 40,000 − 10,000 = 30,000 Depreciation for 1st year = $\frac{5}{15} \times 30,000 = 10,000$ " " IInd year = $\frac{4}{15} \times 30,000 = 8,000$ " " 3rd " = $\frac{3}{15} \times 30,000 = 6,000$ " " 4th " = $\frac{2}{15} \times 30,000 = 4000$ 5th " = $\frac{1}{15} \times 30,000 = 2000$ Total = 30,000	(7)	(7)