



CAYMET'S

SIDDHANT COLLEGE OF ENGINEERING, SUDUMBARE

Department of Mechanical Engineering

Assignment 1

Sub: Quality & Reliability Engg

Sub Code: 402050A

Faculty In-charge: Mr. Ashish H Raut

Date:- 24/03/2022

Class:- BE (MECH)

Max Marks:20

- 1 a Explain Poka yoke with example. 3 CO1
- b Enlist 7 tools of Quality. Explain Ishikawa diagram with neat sketch 4 CO1
- c Write short note on TS16949. 3 CO1
- 2 a Write short not on OC curve and its characteristics 3 CO2
- b The given table shows the number of defectives found in inspection of 10 lots of 100 items each. Determine the control limits for appropriate chart and state whether the process is in control. 4 CO2

Draw the control chart.

Lot no	1	2	3	4	5	6	7	8	9	10
No of Defec tives	6	3	1	4	3	0	5	5	2	3

- c Six hundred bicycle mudguards were observed for point defect- air bubble, scratch, foreign particles, etc. In all 1200 defects were found in 600 mudguards. What type of control chart be used here ? If sample size is 10 , what will be the limits 3 CO2

Siddhant College of Engineering, Sudumbare

Department of Mechanical Engineering

Assignment 1

Date:-24/03/2023

Class: BE Mech

SEM-VIII (AY 2022-23)

Sub:- Q & RE

Marks:-20

Roll No.	Name of student	Marks	Sign
1	ABHISHEK KUMAR YADAV	12	Abhishek
2	AKASH DADASO JADHAV	10	Akash
3	ANIKET DATTATRAYA SASE	15	Aniket
4	ANIKET SHIVAJI SAPNAR	11	Aniket
5	ANKIT GUPTA	11	Ankit
6	AODUT PRAVIN RAVASAHEB	14	Aodut
7	ASHUTOSH BAPUSAHEB TOUNDIKAR	13	Ashutosh
8	AWAGHADE ATISH SHANKAR	13	Awagha
9	BHARAT BARKU BORYE	10	Bharat
10	BIDAYE YASH RAMCHANDRA	11	Yash
11	CHAUDHARI ANUP HIRALAL	17	Anup
12	CHAVHAN ASHWINI SUKHDEV	16	Ashwini
13	DADASAHEB NANASAHEB PAWAR	11	Dadasaheb
14	DAHIVALKAR PUJA PRAVIN	12	Puja
15	DAUNDKAR RAJKUMAR BALASAHEB	12	Rajkumar
16	DESHMUKH AKASH SAMPAT	10	Akash
17	DINDE ARJUN YASHWANT	10	Arjun
18	DIPAK PRADIP KUSUMKAR	12	Dipak
19	DIXIT PRASHANT MANIKRAO	13	Prashant
20	GADE ADESH BALASAHEB	13	Adesh
21	GADE SANTOSH SARJERAO	14	Santosh
22	GAIKWAD KUNDAN KISHOR	12	Kundan
23	GANESH TULSHIDAS KUMBHAR	11	Ganesh
24	GAVHANE AJDUMBAR BALIRAM	12	Ajdumbar
25	GAWADE AJAY MOHAN	15	Ajay
26	GHARE SAGAR VITTHAL	11	Sagar
27	GHURE DILIP DATTATRAY	11	Dilip
28	GUPTA KRISHNA DINESH	11	Krishna
29	HIRATOT SHRISHAIL NAGESHI	08	Shrishail
30	JADHAV SHUBHAM RAJENDRA	12	Shubham
31	JADHAV SIDDHESH KAILAS	11	Siddhesh
32	JARHAD MAYUR POPAT	12	Mayur
33	KADAM AJINKYA BALUBA	11	Ajinkya
34	KAMBALE NAGANATH BHARAT	10	Naganath
35	KAMTIKAR RAHUL BABULAL	11	Rahul

Siddhant College of Engineering, Sudumbare
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Assignment 1

Class: BE Mech
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Date:-24/03/2023
 SEM-VIII (AY 2022-23)

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37	KUMBHAR MADHAV TULASHIDAS	13	M. Kumbhar
38	KUMBHAR NARAYAN KALLAPPA	16	sk
39	LINGADE UMESH DILIP	11	Lingade U
40	MANDALE SUNIL HARIBHAU	11	S. Mandale
41	MANE AKSHAY RAMLING	15	Mane
42	MANE TRUPTI JITENDRA	16	Trupti
43	MANISH UMESH MOURYA	09	Manish
44	MANSI DEEPAK KOKANE	11	Mansi
45	MORE PRASAD DHARMARAJ	11	More
46	NAGARE NIKITA SUDHIR	11	Nikita
47	NIDVANCHE ASHISH BHIM	12	Nidvanche
48	PALKAR RUSHIKESH FULCHAND	13	Palkar
49	PANASKAR SAYALI BAJIRAO	14	Panaskar
50	PARASHRAM PANDURANG PATIL	10	Parashram
51	PATIL JITENDRA VASANT	15	Patil
52	PATIL SHUBHAM RAJENDRA	13	Shubham
53	PAWAR CHANDRAKANT KAILAS	10	Pawar
54	PRIYANKA RAMESH SURYAWANSHI	11	Priyanka
55	ROHIT SANDEEP SAWANT	10	Rohit
56	SAGAR SANJAY JADHAV	10	Sagar
57	SAIPRASAD NANOKUMAR SHINDE	12	Saiprasad
58	SANKET SANDEEP PATIL	13	Sanket
59	SATALE AVINASH HARISHCHANDRA	15	Satale
60	SATHE DHANANJAY DNYANESHWAR	08	Sathe
61	SHAHIL PAWAR	13	Shahil
62	SHINDE GANESH BALASO	12	Shinde
63	SHINKAR PRATIK VIJAY	13	Shinkar
64	SUTAR RUSHIKESH HANUMANT	12	Sutar
65	TAKBHATE SHUBHAM JAGADISH	11	Takbhat
66	TELGOTE NILESH DEORAO	12	TELGOTE
67	UGWEKAR DHANANJAY SHRIKRISHNA	14	Ugwekar
68	VICHARE PRATHAMESH DIPAK	17	Vichare
69	WANKAR JAYESH RAMESH	13	Wankar
70	YASIN RAMJAN MUJAWAR	12	Yasin

Prof A. H. Bhat
 Subject Teacher

15
20

A2

Page No.			
Date			

Name - AKSHAY RANVING MAME

Roll No - 41 (Forty one)

Day - 24/03/2023

Subject - Quality & Reliability Engg.

Assignment No - 01

Q.1	Q.2
08	07

Q 1)

a) Explain poka yoke example?

→ poka yoke is Japanese term that means "mistake-proofing or error proofing or avoiding inadvertent errors".

It refers to any mechanism or process that is designed to prevent mistakes or errors from occurring in a system. The goal of poka yoke is to improve the quality and reliability of a system by reducing the likelihood of errors and defects. Under the principle of poka yoke, the method of preventing errors in the process and making them human independent as far as possible are the work for this a standard operation procedure or the SOP is written so that the errors are minimal and there is a consistency in the performance.

The process runs as per the written down method of working that is the SOP. The process performance is measured by periodic audit with or without a checklist. The process can also be measured by the control chart.

These are the methods which measure and record whether the process or the product is as per the specification and within the normal or outside it.

In case the product service or the process is not as per normal and outside the control limit, suitable warning mechanism as well as the corrective measure have to be taken: to first stop the process output in terms of the product and the service is as per the desired performance level.

The identification of occurrence of the error or the mistake issuing warning signals stopping the machine or the process back to the desired performance level can be done manually.

The permanency of control mechanism increases manifold as we move from manual to automation. The objective of poka yoke is to prevent errors in the process and make them human independent for as possible.

The movement of the process starts producing product outside the control limit, the sensor in automatic in-process gauging system senses the error and stop the machine and simultaneously store a warning mechanism in the form of a buzzer or warning red light.

2. Auto e-mail generation for meeting deadline

2. Automatic regression testing

3. Print down menu

4. pop up menu for wrong entry

5. Auto validation check for incorrect field

Q(B) Enlist 7 tools of Quality. Explain Ishikawa diagram with neat sketch?

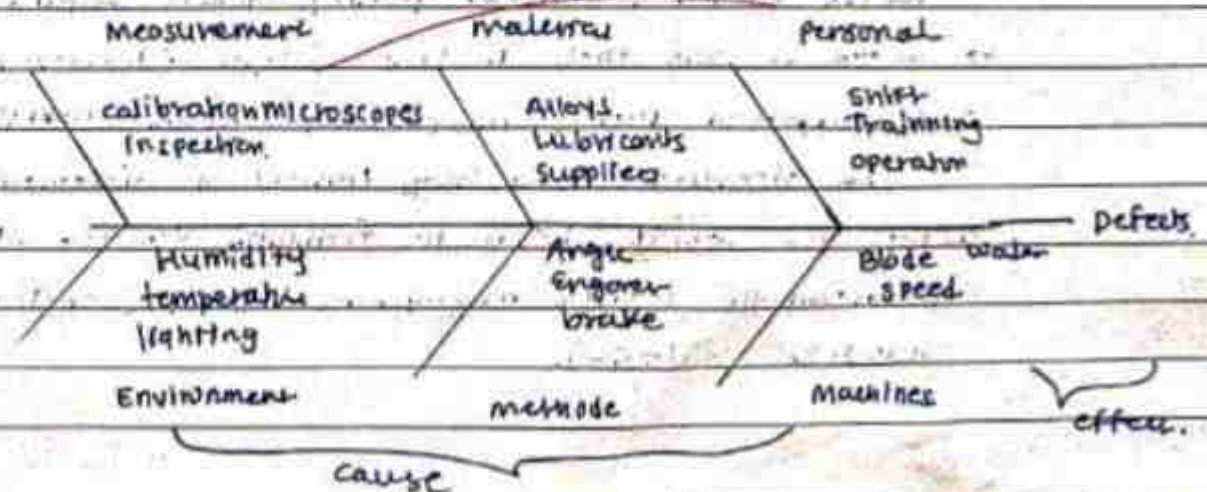
The old seven quality tools are

- 1) Check sheets
- 2) Flow charts
- 3) Histograms
- 4) Pareto chart
- 5) Cause and effect diagram / Ishikawa diagram
- 6) Scatter diagram
- 7) Control charts

Ishikawa diagram

Ishikawa diagram are also called fishbone diagram, herringbone diagram or cause and effect diagram. Ishikawa diagram are causal diagram that show cause of central event created by Kaoru Ishikawa. Common use of Ishikawa diagram are product design and quality defect prevention, to identify potential factors causing an overall effect. Each cause or reason for imperfect is a source of variation. Cause are usually grouped into major categories.

- 1) People :- Anyone involved with the process.
- 2) Method :- How the process is performed and the specific requirements for doing it such as policies, procedures, rules, regulations & laws.
- 3) Machines :- Any equipment, computer, tools etc required to accomplish the job.
- 4) Materials :- Raw material parts, pens, paper etc. used to produce the final product.
- 5) Measurement :- Data generated from the process that are used to evaluate quality.
- 6) Environment :- The condition such as location, time, temperature and culture in which the process operates.



causes In the diagram are often categorized as machine, method, material man, power, measurement, environment. Cause & effect diagram can reveal key relationship.

(c) Write a short note on TS16949

ISO/TS 16949 - 2000 is an ISO technical Specification model for aligning automotive quality systems. Standard of most international automobile companies.

The goal of the standard is to develop a quality management system that provides for continual improvement; emphasizing defect prevention and reduction of waste and variation in supply chain.

It is meant to eliminate the need for multiple certification to satisfy customer needs. The standard was developed by ISO and the International Automotive Task force (IATF).

IATF is an adhoc body of well known Automobile companies of the world including BMW, Daimler, Chrysler, Ford, Renault, Volkswagen etc.

The requirements of the standard apply to design, development, production, installation & servicing of automobile related products the format of TS16949.

Beside defining international quality system requirements to automotive core tools in the context of improved quality, part approval process, measurement system analysis etc.

The standard has a huge impact on automotive industry across the world because it formulates under a single global standard the quality management system requirements that must be satisfied.

Q(2)

(a) Write short note on OC curve and its characteristics?

→ Following types of risks are associated with acceptance sampling.

- i) Producer Risk
- ii) Consumer Risk

i) **Producer Risk**: Sometimes it happens that inspite of good quality the sample taken may show defective units and the entire lot is rejected.

Insipk of good quality the lot is rejected, such a type of risk of rejection is known as producer risk.

ii) **Consumer Risk**:

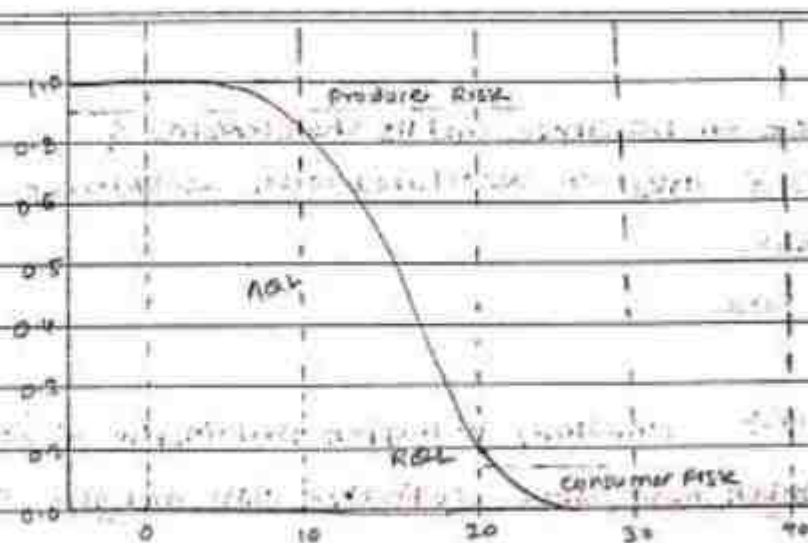
Sometimes it may happen the lot quality of the lot is not good but the samples picked up at randomly resulted good quality. Under os such the consumer has to accept a defective lot.

Such a risk is known as consumer risk.

In other word the probability of accepting a lot which has actually been satisfactory by the consumer according to a predetermined standard is known as consumer risk. Thus the risk of accepting a lot of bad items is known as consumer risk.

The consumer & producer both decide the acceptance standard of the lot. This is known as acceptable quality level (AQL) or lot of Tolerance percentage Defective (LTPD)

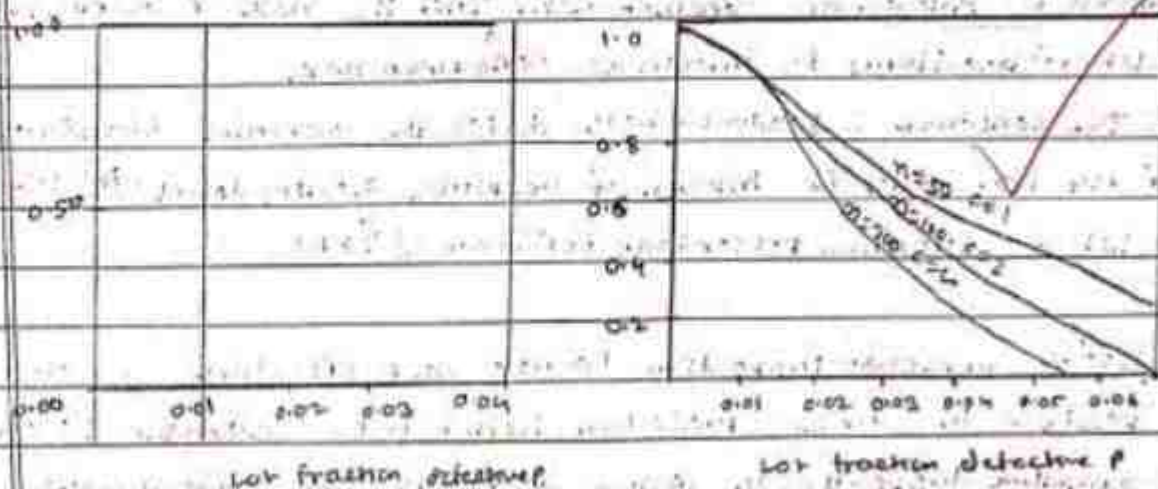
100% percent inspection is not cost effective & not possible in mass production hence it is desirable to use sampling inspection in which acceptance or rejection of complete lot or batch is based on the results obtained from sample.



(5)2

Fig. Show OC curve with an AQL of 0.9 percent defect if 0.1)
 a AQL of 0.8 producer Risk of 0.1 consumer risk of 0.1 sample
 size of 86 and acceptance number of 12

Each of criteria can have a profound effect on the other
 for developing a sampling plan that balance cost versus
 risk. While your initial selection may be that this is not
 applicable to DOD testing, the same principle for creating
 OC curves can help for certain types of DOD testing. OC
 curve practical graphic method to understand criteria,
 alpha, beta, delta.



- (b) The given data table shows that the number of defective found in inspection of 10 lots of 100 items each. Determine the control limits for appropriate chart and state whether the process is in control.

Lot of no	1	2	3	4	5	6	7	8	9	10
No of Defectives	6	3	1	4	3	0	5	5	2	3

→ given data $n=100$ no. of lot = 10

$$\bar{p} = \frac{\text{Total number of defective}}{\text{Total number of inspected items}}$$

$$= \frac{6+3+1+4+3+0+5+5+2+3}{100 \times 10}$$

$$\bar{p} = 0.032$$

step 2. calculate the upper & lower control p-chart

$$(UCL)_p = \bar{p} + 3 \times \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$

$$(UCL)_p = 0.032 + 3 \times \sqrt{\frac{0.032(1-0.032)}{100}} = 0.0848$$

$$\text{and } (LCL)_p = \bar{p} - 3 \times \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$

$$= 0.032 - 3 \times \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}$$

$$= 0.032 - 3 \times \sqrt{\frac{0.032(1-0.032)}{100}}$$

$$(LCL)_p = -0.0208$$

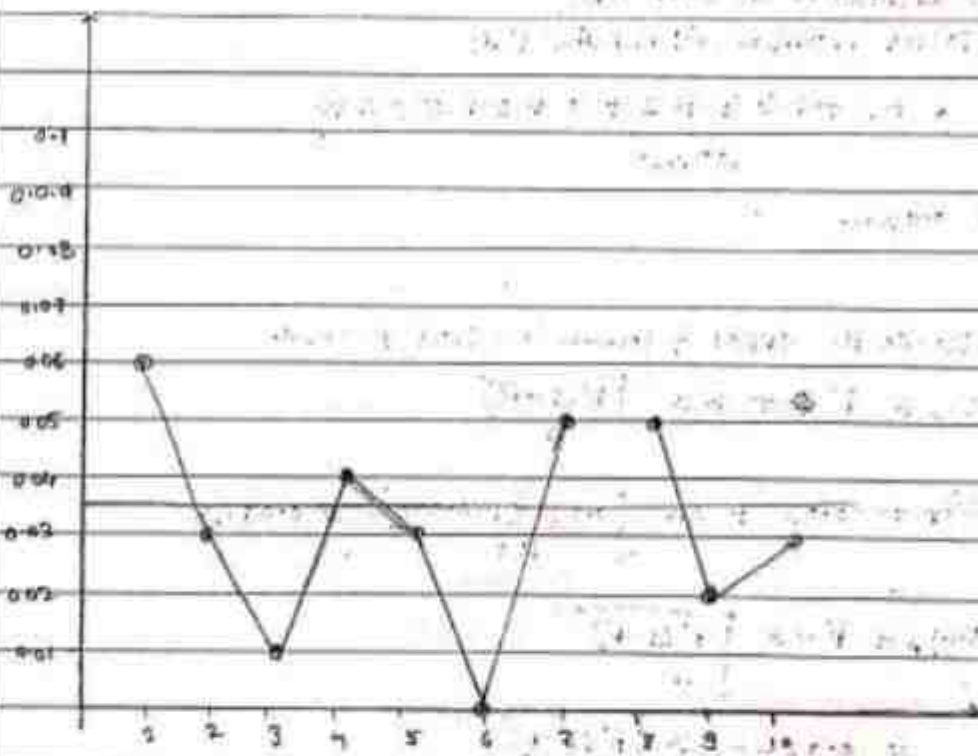
calculate the value of fraction defectives for each lot

Fraction defective = $\frac{\text{No. of defective Jobs}}{\text{No. of Jobs Inspected}}$

$$= \frac{6}{100} = 0.06$$

$$\text{fraction defective} = \frac{3}{100} = 0.03$$

Lot No	1	2	3	4	5	6	7	8	9	10
No. of defective	6	3	2	4	3	0	5	5	2	3
Fraction defective	0.06	0.03	0.02	0.04	0.03	0	0.05	0.05	0.02	0.03



- (c) six hundred bicycle mudguards were observed for point defect - air bubble scratch, foreign particles, etc. In all 1200 defects were found in 600 mudguards. what type of control chart be used here? if sample size is 10, what will be the limits.

(c)
 No of defects = 1200 } U-chart
 Sample size $n = 10$
 No. of items inspected $m = 600$

$$\bar{U} = \frac{C}{n} = \frac{1200}{600} = 2$$

$$\begin{aligned}
 UCL &= \bar{U} + 3\sqrt{\frac{\bar{U}}{n}} \\
 &= 2 + 3\sqrt{\frac{2}{10}} = 3.3416
 \end{aligned}$$

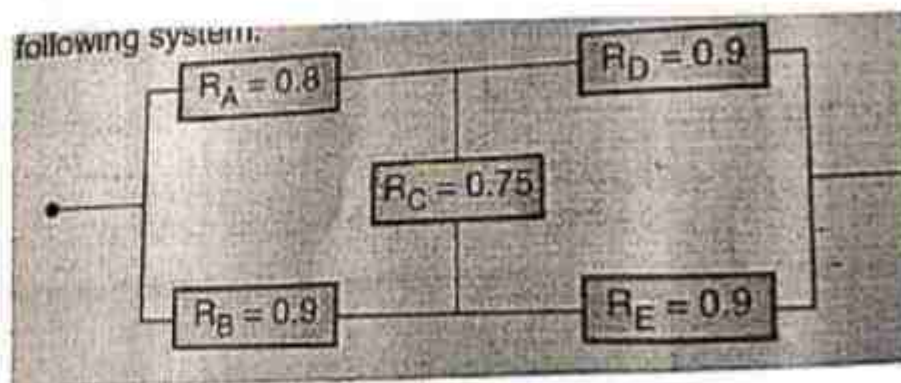
$$\begin{aligned}
 LCL &= \bar{U} - 3\sqrt{\frac{\bar{U}}{n}} \\
 &= 2 - 3\sqrt{\frac{2}{10}} = 0.6583
 \end{aligned}$$

**Department of Mechanical Engineering
Assignment 2**

Sub: Quality & Reliability Engg
Sub Code: 402050A
Faculty In-charge: Mr. Ashish H Raut

Date:-20/04/2023
Class:- BE (MECH)
Max Marks:20

- 1 a Define And Explain 2 CO3
- i) Failure Density
ii) Hazard Rate
- b Explain different laws of Probability with examples 4 CO3
- c The tests are conducted on 500 screws and results are tabulated as given below. Find Failure density, Hazard rate of the screw. 4 CO3
- | Time Interval (hrs) | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|----------------------|------|-------|-------|-------|-------|
| No. of failed screws | 174 | 126 | 85 | 75 | 40 |
- 2 a Find the reliability of the system using conditional Probability method 4 CO4





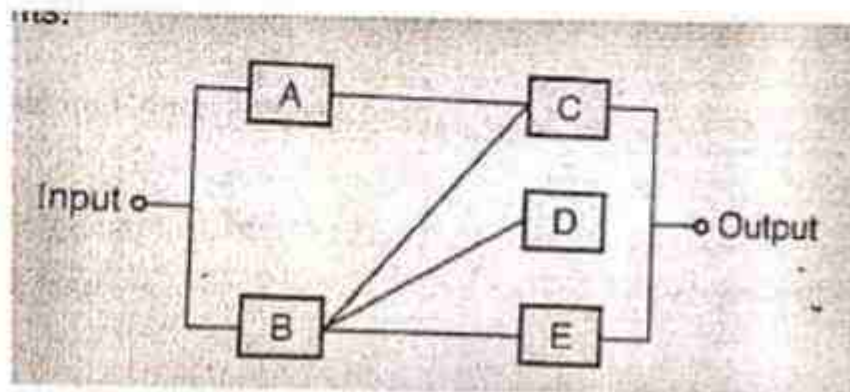
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Department of Mechanical Engineering

Assignment 2

- b Find the reliability of the system shown in fig using cut set method. Also draw equivalent block diagram using minimal cut set element. 4 CO4



- c What is reliability allocation? Write the advantages of reliability allocation method. 2 CO4

Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering
Assignment 2

Class: BE Mech

Date:-20/04/2023

Sub:- Q & RE

SEM-VIII (AY 2022-23)

Marks:-20

Roll No.	Name of student	Marks	Sign
1	ABHISHEK KUMAR YADAV	13	
2	AKASH DADASO JADHAV	16	
3	ANIKET DATTATRAYA SASE	12	
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11	CHAUDHARI ANUP HIRALAL	18	
12	CHAVHAN ASHWINI SUKHDEV	13	
13	DADASAHEB NANASAHEB PAWAR	7	
14	DAHIVALKAR PUJA PRAVIN	17	
15	DAUNDKAR RAJKUMAR BALASAHEB	7	
16	DESHMUKH AKASH SAMPAT	12	
17	DINDE ARJUN YASHWANT	12	
18	DIPAK PRADIP KUSUMKAR	14	
19	DIXIT PRASHANT MANIKRAO	18	
20	GADE ADESH BALASAHEB	12	
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22	GAIKWAD KUNDAN KISHOR	12	
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24	GAVHANE AUDUMBAR BALIRAM	14	
25	GAWADE AJAY MOHAN	12	
26	GHARE SAGAR VITTHAL	11	
27	GHURE DILIP DATTATRAY	13	
28	GUPTA KRISHNA DINESH	13	
29	HIRATOT SHRISHAIL NAGESHI	13	
30	JADHAV SHUBHAM RAJENDRA	12	
31	JADHAV SIDDESH KAILAS	11	
32	JARHAD MAYUR POPAT	12	
33	KADAM AJINKYA BALIBA	12	
34	KAMBALE NAGANATH BHARAT	11	

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Department of Mechanical Engineering
Assignment 9

Date:-20/04/2023

Class: BE Mech

SEM-VIII (AY 2022-23)

Sub:- Q & RE

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37	KUMBHAR MADHAV TULASHIDAS	14	Madhav
38	KUMBHAR NARAYAN KALLAPPA	15	Narayan
39	LINGADE UMESH DILIP	07	Lingade
40	MANDALE SUNIL HARIBHAU	12	Sunil
41	MANE AKSHAY RAMLING	13	Akshay
42	MANE TRUPTI JITENDRA	10	Trupti
43	MANISH UMESH MOURYA	13	Manish
44	MANSI DEEPAK KOKANE	11	Mansi
45	MORE PRASAD DHARMARAJ	07	Prasad
46	NAGARE NIKITA SUDHIR	16	Nikita
47	NIDVANCHE ASHISH BHIM	11	Ashish
48	PALKAR RUSHIKESH FULCHAND	12	Rushikesh
49	PANASKAR SAYALI BAJIRAO	12	Sayali
50	PARASHRAM PANDURANG PATIL	13	Parashram
51	PATIL JITENDRA VASANT	13	Jitendra
52	PATIL SHUBHAM RAJENDRA	13	Shubham
53	PAWAR CHANDRAKANT KAILAS	14	Chandrakant
54	PRIYANKA RAMESH SURYAWANSHI	13	Priyanka
55	ROHIT SANDEEP SAWANT	17	Rohit
56	SAGAR SANJAY JADHAV	13	Sagar
57	SAIPRASAD NANDKUMAR SHINDE	14	Saiprasad
58	SANKET SANDEEP PATIL	17	Sanket
59	SATALE AVINASH HARISHCHANDRA	13	Avinash
60	SATHE DHANANJAY DNYANESHWAR	12	Sathe
61	SHAHIL PAWAR	17	Shahil
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63	SHINKAR PRATIK VIJAY	13	Pratik
64	SUTAR RUSHIKESH HANUMANT	13	Rushikesh
65	TAKBHATE SHUBHAM JAGADISH	11	Shubham
66	TELGOTE NILESH DEORAO	11	Nilesh
67	UGWEKAR DHANANJAY SHRIKRISHNA	16	Dhananjay
68	VICHARE PRATHAMESH DIPAK	17	Prathamesh

Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering
Assignment 2

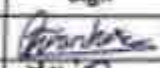
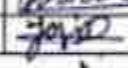
Date:-20/04/2023

Class: BE Mech

SEM-VIII (AY 2022-23)

Sub:- Q & RE

Marks:-20

Roll No.	Name of student	Marks	Sign
69	WANKAR JAYESH RAMESH	12	
70	YASIN RAMJAN MUJAWAR	13	


Prof. A. H. H. H. H.
Subject Teacher

Topic : _____

Page No. : _____

Date. : / /

18
ND
Act

Name - Dixit Prayant Manikrao

Roll No - 2019

Subject - CORE

- Assignment No 2.

A-1
9
A-2
9

Q.1

(a) Define

i] Failure density:-

At any point in life of component the incremental change in number of failure per associated with incremental change in time

ii] Hazard rate:-

At a particular time, the rate of change of number of item, that have failed divided by the number of items surviving.

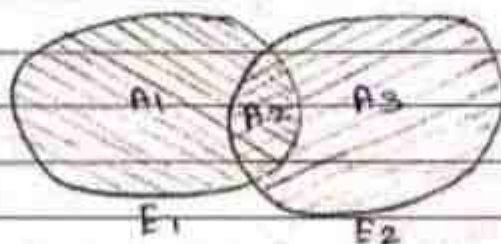
$$\lambda(t) = \frac{f(t)}{R(t)}$$

(b) Explain different laws of probability with example.

→ Probability can be defined in number of ways. we will consider two definitions namely: the relative frequency & axiomatic definitions.

i] Union & intersection of two events:-

* If E_1 and E_2 denotes two events, then the union of E_1 & E_2 means occurrence of event E_1 or E_2 or both. It denoted by $E_1 \cup E_2$ or $E_1 + E_2$



* Intersection of E_1 & E_2 means the joint occurrence of event E_1 or E_2 or both.

* E_1 = shortage of material

E_2 = shortage of skilled workers in plant then

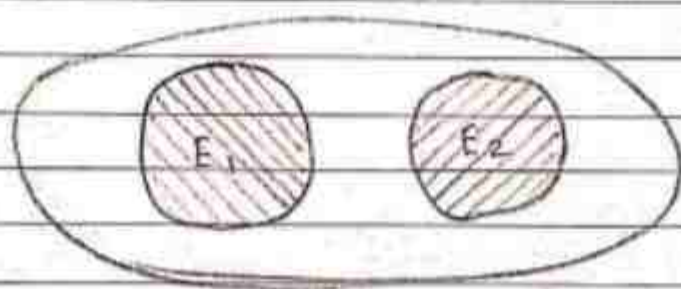
$E_1 \cup E_2$ = shortage of material or workers are both

$E_1 \cap E_2$ = shortage of material & skilled workers

$$\therefore P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$$

$$= P(E_1) + P(E_2) - P(E_1) \cdot P(E_2)$$

2] Mutually Exclusive events:-



When two sets E_1 & E_2 not having common elements the area do not overlaps in Venn diagram are called mutually exclusive or disjoint events

e.g.

E_1 = 'rain in locality'

E_2 = Drought in the same locality.

$$P(E_1 \cap E_2) = 0$$

$$P(E_1 \cup E_2) = P(E_1) + P(E_2)$$

3] Complementary events:-

Associated with any event there is

Topic : _____

Page No. : (3)

Date : / /

Another event known as complementary event denoted as $\bar{E}$

2] If sample space corresponding to event E is represented as 'S' in the Venn diagram.

The remaining space $\bar{S}$ denoted complement or negation of E as $\bar{E}$

3] If $P(E)$ & $P(\bar{E})$ are respective probabilities when $P(E) + P(\bar{E}) = 1$

E = Appearance of no 6 upon a rolling die

$\bar{E}$ = Appearance of any other number

$$n(E) = 1$$

$$n(\bar{E}) = 5$$

$$\therefore P(E) = \frac{1}{6} \text{ \& } P(\bar{E}) = 1 - P(E) = \frac{5}{6}$$

4] Conditional Probability:-

The occurrence of event E_2 , when it is known that E_1 has occurred, is known as the conditional event & is denoted as $\frac{E_2}{E_1}$. The probability of event is defined as:-

$$P\left(\frac{E_2}{E_1}\right) = \frac{P(E_2 \cap E_1)}{P(E_1)} = \frac{P(E_1) \times P(E_2)}{P(E_1)}$$

5] The tests are conducted on 500 screws & results are tabulated as given below find failure density hazard rate of screw.

Topic : _____

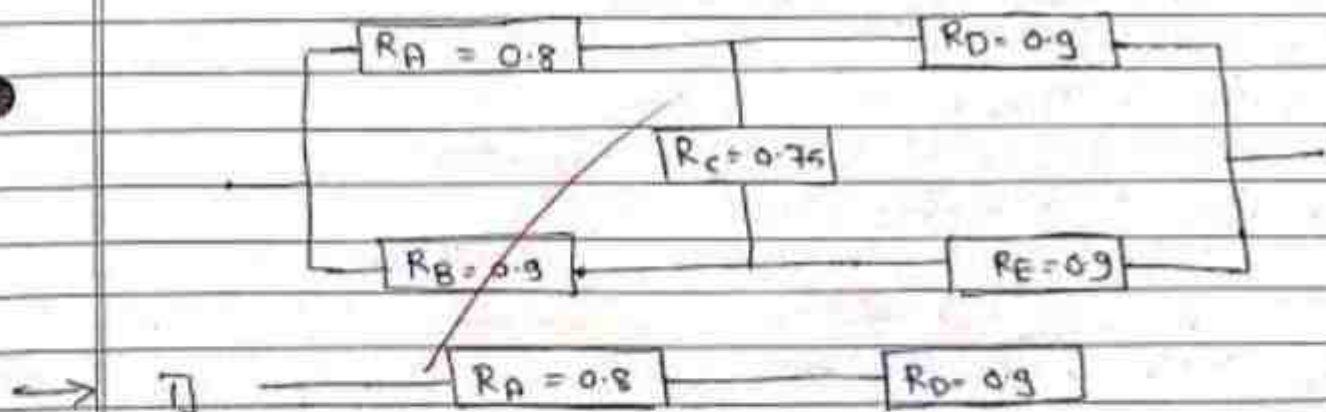
Page No. : 11

Date : / /

Time Interval hr	Failure density per hr	Hazard rate of screw per hr
0-10	$\frac{174}{500} \times 10 = 3.48$	$\frac{174}{500} \times 10 = 3.48$
10-20	$\frac{126}{500} \times 10 = 2.52$	$\frac{126}{326} \times 10 = 3.86$
20-30	$\frac{85}{500} \times 10 = 1.7$	$\frac{85}{200} \times 10 = 4.25$
40-50	$\frac{40}{500} \times 10 = 0.8$	$\frac{40}{40} \times 10 = 10$
30-40	$\frac{75}{500} \times 10 = 1.5$	$\frac{75}{115} \times 10 = 6.52$

Q.2

a) Find the reliability of system using conditional probability method



$$R_1 = R_A \times R_D$$

$$= 0.8 \times 0.9$$

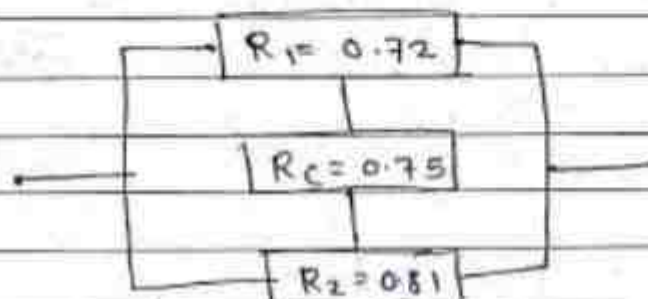
$$R_1 = 0.72$$

2]

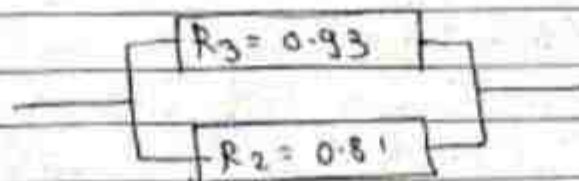


$$\begin{aligned}
 R_2 &= R_D \times R_E \\
 &= 0.9 \times 0.9 \\
 R_2 &= 0.81
 \end{aligned}$$

3]



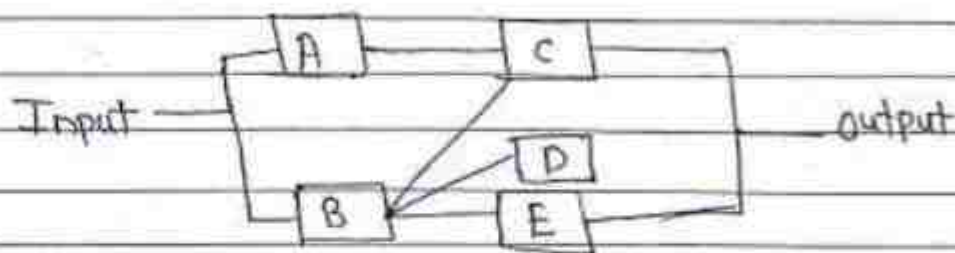
$$\begin{aligned}
 R_3 &= 1 - [(1 - R_1) \times (1 - R_C)] \\
 &= 1 - [(1 - 0.72) \times (1 - 0.81)] \\
 R_3 &= 0.93
 \end{aligned}$$



$$\begin{aligned}
 R_C &= 1 - [(1 - R_3) \times (1 - R_2)] \\
 &= 1 - [(1 - 0.93) \times (1 - 0.81)] \\
 R_C &= 0.98
 \end{aligned}$$

Reliability of system is 0.98

- b) Find reliability of the system using cut set method. Also draw equivalent block diagram using minimal cut set element.



Minimal cut sets are

$$C_1 = AB$$

$$C_2 = BC$$

$$C_3 = CDE$$

Failure of system is given by.

$$F(s) = P[(\bar{A}\bar{B}) \text{ or } (\bar{B}\bar{C}) \text{ or } (\bar{C}\bar{D}\bar{E})]$$

$$= P(\bar{A}\bar{B}) + P(\bar{B}\bar{C}) + P(\bar{C}\bar{D}\bar{E}) - P(\bar{A}\bar{B}\bar{C}) - P(\bar{B}\bar{C}\bar{D}\bar{E})$$

$$- P(\bar{A}\bar{B}\bar{C}\bar{D}\bar{E}) + P(\bar{A}\bar{B}\bar{C}\bar{D}\bar{E})$$

$$= P(\bar{A}\bar{B}) + P(\bar{B}\bar{C}) + P(\bar{C}\bar{D}\bar{E}) - P(\bar{A}\bar{B}\bar{C}) - P(\bar{B}\bar{C}\bar{D}\bar{E})$$

$$= P(\bar{A})P(\bar{B}) + P(\bar{B})P(\bar{C}) + P(\bar{C})P(\bar{D})P(\bar{E}) - P(\bar{A})P(\bar{B})$$

$$P(\bar{C}) - P(\bar{B})P(\bar{C})P(\bar{D})P(\bar{E})$$

$$= (1 - R_A)(1 - R_B) + (1 - R_B)(1 - R_C) + (1 - R_C)(1 - R_D)(1 - R_E)$$

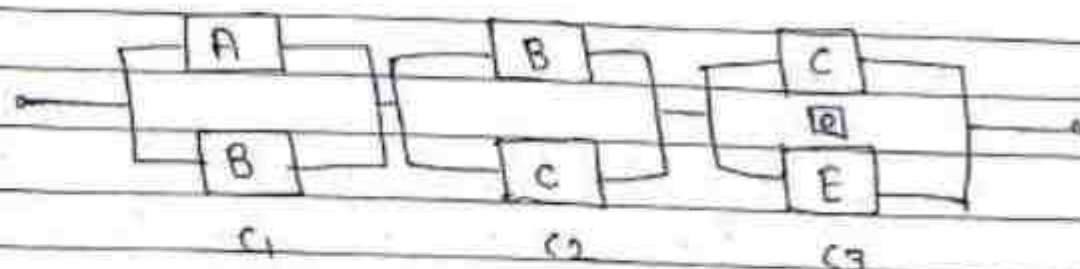
$$F(s) = 1 - R_A R_C + 1 - R_A R_B R_C + R_B R_D - R_B R_C + R_B R_D R_E - R_B R_C$$

$$+ R_B R_C R_D + R_B R_C R_E + R_B R_C R_D + R_E$$

$$R(s) = 1 - F(s) = R_A R_C + R_B R_C + R_B R_D + R_B R_E + R_A R_B R_C -$$

$$R_B R_D R_E - R_B R_C R_D - R_B R_C R_E + R_B R_C R_D R_E$$

Block diagram using minimal cut set element the cut set denoted by C_1 , C_2 & C_3 are assumed to be connected in series, since occurrence of any one cut set implies the failure of system.



c) What is reliability allocation? Write the advantages of reliability allocation method.

1] Process of assigning the reliability requirements to individual component to attain the specialized system reliability is called reliability allocation or apportionment.

2] Purpose of assigning the reliability requirements to individual component to attain the specialized system reliability.

3] Generally reliability factor of a system is known or specified on basis of overall mission requirements.

4] If system comprises many element & unit, we must have a method to determine reliability factor for each of them, so that when they are assembled to form a system the system reliability have a desire value.

* Advantages of reliability allocation methods-

1] The allocation distributes reliability of subsystem & individual component into more critical blocks.

2] It help optimize the best combination of component ~~rel~~ reliability improvement that ~~met~~ meet the intended goals and at sufficient allocated costs.

3] It gives a detailed overview of how your business expenses are used.



Sub: Quality & Reliability Engg

Sub Code: 402050A

Faculty In-charge: Mr. Ashish H Raut

Date:-05/05/2023

Class:- BE (MECH)

Max Marks: 20

- 1 a Write name and applications of symbols used in Construction of Fault tree with neat sketches 4 CO5
- b For an emergency operation theater in a hospital, the power is obtained from the main city supply through a transformer connected in series. To ensure and uninterrupted series supply, an auxiliary generator is also used with a suitable switch over. The probability of failure of the main city supply is 0.01 and transformer reliability is 0.996. The auxiliary power generator has a reliability factor of 0.99. Draw a block diagram for the system. Construct the fault tree and calculate reliability of the system. 6 CO5
- 2 a Write Objectives of Maintenance. Explain different types of Maintenance 4 CO6
- b Write short notes on 6 CO6
- i) Reliability Growth Testing
- ii) Markov Chain Analysis
-

CAYMET'S
Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering
Assignment 3

Class: BE Mech

Sub: Q & RE

Date: 05/05/2023

SEM-VIII (AY 2022-23)

Marks: 20

Roll No.	Name of student	Marks	Sign
1	ABHISHEK KUMAR YADAV		
2	AKASH DADASO JADHAV	17	Abhishe
3	ANIKET DATTATRAYA SASE	12	Aniket
4	ANIKET SHIVAJI SAPNAR	17	Sasana
5	ANKIT GUPTA	11	Ankit
6	AJODUT PRAVIN RAVASAHEB	10	Ajodut
7	ASHUTOSH BAPUSAHEB TOUNDKAR	13	Ashutosh
8	AWAGHADE ATISH SHANKAR	11	Atish
9	BHARAT BARKU BORYE	13	Bharat
10	BIDAYE YASH RAMCHANDRA	11	Bidaye
11	CHAUDHARI ANUP HIRALAL	10	Anup
12	CHAVHAN ASHWINI SUKHDEV	15	Chavhan
13	DADASAHEB NANASAHEB PAWAR	10	Dadasaheb
14	DAHIVALKAR PUJA PRAVIN	10	Puja
15	DAUNDKAR RAJKUMAR BALASAHEB	14	Rajkumar
16	DESHMUKH AKASH SAMPAT	15	Akash
17	DINDE ARJUN YASHWANT	12	Arjun
18	DIPAK PRADIP KUSUMKAR	13	Dipak
19	DIXIT PRASHANT MANIKRAO	16	Dixit
20	GADE ADESH BALASAHEB	11	Adesh
21	GADE SANTOSH SARJERAO	12	Santosh
22	GAIKWAD KUNDAN KISHOR	15	Kundan
23	GANESH TULSHIDAS KUMBHAR	13	Ganesh
24	GAVHANE AJDUMBAR BALIRAM	23	Ajdumbar
25	GAWADE AJAY MOHAN	11	Ajay
26	GHARE SAGAR VITTHAL	09	Sagar
27	GHURE DILIP DATTATRAY	12	Dilip
28	GUPTA KRISHNA DINESH	10	Krishna
29	HIRATOT SHRISHAIL NAGESHI	13	Shrishail
30	JADHAV SHUBHAM RAJENDRA	11	Shubham
31	JADHAV SIDDESH KAILAS	12	Siddesh
32	JARHAD MAYUR POPAT	9	Mayur
33	KADAM AJINKYA BALIBA	12	Ajinkya
34	KAMBALE NAGANATH BHARAT	9	Naganath
35	KAMTIKAR RAHUL BABULAL	13	Rahul
		12	Rahul

Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering
Assignment 3

Class: BE Mech

Sub: Q & RE

Date: 05/05/2023

SEM-VIII (AY 2022-23)

Marks: 20

Roll No.	Name of student	Marks	Sign
36	KSHIRSAGAR SADHANA SHANTUNG	10	Ssk
37	KUMBHAR MADHAV TULASHIDAS	15	MParabhe
38	KUMBHAR NARAYAN KALLAPPA	11	Kallappa
39	LINGADE UMESH DILIP	7	Lingade
40	MANDALE SUNIL HARIBHAU	12	Sunil
41	MANE AKSHAY RAMLING	11	Amane
42	MANE TRUPTI JITENDRA	09	Trupti
43	MANISH LIMESH MOURYA	14	Manish
44	MANSI DEEPAK KOKANE	12	Mansi
45	MORE PHASAD DHARMARAJ	10	More
46	NAGARE NIKITA SUDHIR	14	Nikita
47	NIDVANICHE ASHISH BHIM	13	Nidvaniche
48	PALKAR RUSHIKESH FULCHAND	12	Palkar
49	PANASKAR SAYALI BAJIRAO	14	Panaskar
50	PARASHRAM PANDURANG PATIL	14	Parashram
51	PATIL JITENDRA VASANT	11	Jitendra
52	PATIL SHUBHAM RAJENDRA	12	Shubham
53	PAWAR CHANDRAKANT KAILAS	15	Pawar
54	PRIYANKA RAMESH SURYAWANSHI	12	Priyanka
55	ROHIT SANDEEP SAWANT	13	Rohit
56	SAGAR SANJAY JADHAV	11	Sagar
57	SAIPRASAD NANDKUMAR SHINDE	11	Shinde
58	SANKET SANDEEP PATIL	14	Sanket
59	SATALE AVINASH HARISHCHANDRA	13	Satale
60	SATHE DHANANJAY DNYANESHWAR	13	Sathe
61	SHAHIL PAWAR	14	Shahil
62	SHINDE GANESH BALASO	11	Shinde
63	SHINKAR PRATIK VUAY	10	Shinkar
64	SUTAR RUSHIKESH HANUMANT	12	Sutar
65	TAKBHATE SHUBHAM JAGADISH	11	Takbhate
66	TELGOTE NILESH DEORAO	10	TELGOTE
67	UGWEKAR DHANANJAY SHRIKRISHNA	14	Ugwekar
68	VICHARE PRATHAMESH DIPAK	14	Vichare
69	WANKAR JAYESH RAMESH	11	Wankar
70	YASIN RAMJAN MUJAWAR	14	Yasin

Prof. A. H. Raut
Subject Teacher



CAYMET's

SIDDHANT COLLEGE OF ENGINEERING, SUDUMBARE**Department of Mechanical Engineering****Mid Term Test**

Sub: Quality & Reliability Engg

Sub Code: 402050A

Faculty In-charge: Mr. Ashish H Raut

Date:- 29/03/2022

Times:- 1 hr

Max Marks: 20

- 1 a. Explain Cost of Quality 5 CO1
b. Write Short Note on Quality Circle. 5 CO1

OR

- 2 a. Enlist Seven quality tools. Explain any one tool 5 CO1
b. Write Short note on PDCA cycle 5 CO1

- 3 a. Enlist different types of control charts & their applications/ uses. 4 CO2
b. The number of defects found in each sample of paper of 1 square meter area are shown below. Draw appropriate control chart & state whether the process is under control or not. If sample falling outside control limits is taken out, what are the new control limits? 6 CO2

Sample	1	2	3	4	5	6	7	8	9	10	11	12
No of Defects Found	5	6	2	5	2	6	6	13	6	5	6	4

OR

- 4 a. Enlist and explain different types of sampling plans. 4 CO2
b. X and R control charts are maintained for a dimension of a component. The data is collected. The subgroup size for the calculations is taken as 5. The values of X and R are calculated for each subgroup. The values of summation of X and R are for 25 subgroups are 614.8 and 120 respectively. Compute the control limits for X chart $R = 2.32\sigma$ 6 CO2

ALL THE BEST

Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering

Mid Term Test

Class: BE Mech
Sub: Q & RE

Date: 29/03/2023
SEM-VIII (AY 2022-23)

Marks: 20

Roll No.	Name of student	Marks	Sign
1	ABHISHEK KUMAR YADAV	16	Abhishek
2	AKASH DADASO JADHAV	09	Akash
3	ANIKET DATTATRAYA SASE	11	Sase
4	ANIKET SHIVAJI SAPNAR	12	Aniket
5	ANKIT GUPTA	16	Ankit
6	AOUDIT PRAVIN RAVASAHEB	13	Audit
7	ASHUTOSH BAPUSAHEB TOUNDKAR	11	Ashutosh
8	AWAGHADE ATISH SHANKAR	16	Atish
9	BHARAT BARKU BORYE	10	Bharat
10	BIDAYE YASH RAMCHANDRA	11	Yash
11	CHAUDHARI ANUP HIRALAL	11	Anup
12	CHAVHAN ASHWINI SUKHDEV	12	Ashwini
13	DADASAHEB NANASAHEB PAWAR	12	Dadasaheb
14	DAHIVALKAR PUJA PRAVIN	08	Puja
15	DAUNDKAR RAJKUMAR BALASAHEB	10	Rajkumar
16	DESHMUKH AKASH SAMPAT	10	Akash
17	DINDE ARJUN YASHWANT	11	Arjun
18	DIPAK PRADIP KUSUMKAR	15	Dipak
19	DIXIT PRASHANT MANIKRAO	11	Prashant
20	GADE ADESH BALASAHEB	12	Adesh
21	GADE SANTOSH SARJERAO	16	Santosh
22	GAIKWAD KUNDAN KISHOR	13	Kundan
23	GANESH TULSHIDAS KUMBHAR	11	Ganesh
24	GAVHANE AUDUMBAR BALIRAM	14	Audumbar
25	GAWADE AJAY MOHAN	15	Ajay
26	GHARE SAGAR VITTHAL	12	Sagar
27	GHURE DILIP DATTATRAY	14	Dilip
28	GUPTA KRISHNA DINESH	17	Krishna
29	HIRATOT SHRISHAIL NAGESHI	12	Hiratot
30	JADHAV SHUBHAM RAJENDRA	14	Shubham
31	JADHAV SIDDESH KAILAS	14	Siddesh
32	JARHAD MAYUR POPAT	12	Mayur
33	KADAM AJINKYA BALIBA	06	Ajinkya
34	KAMBALE NAGANATH BHARAT	13	Naganath
35	KAMTIKAR RAHUL BABULAL	14	Rahul

Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering
Mid Term Test

Date:-29/03/2023

Class: BE Mech

SEM-VIII (AY 2022-23)

Sub:- Q & RE

Marks:-20

Roll No.	Name of student	Marks	Sign
36	KSHIRSAGAR SADHANA SHANTLING	11	<i>[Signature]</i>
37	KUMBHAR MADHAV TULASHIDAS	12	<i>[Signature]</i>
38	KUMBHAR NARAYAN KALLAPPA	15	<i>[Signature]</i>
39	LINGADE UMESH DILIP	16	<i>[Signature]</i>
40	MANDALE SUNIL HARIBHAU	09	<i>[Signature]</i>
41	MANE AKSHAY RAMLING	15	<i>[Signature]</i>
42	MANE TRUPTI JITENDRA	13	<i>[Signature]</i>
43	MANISH UMESH MOURYA	08	<i>[Signature]</i>
44	MANSI DEEPAK KOKANE	14	<i>[Signature]</i>
45	MORE PRASAD DHARMARAJ	16	<i>[Signature]</i>
46	NAGARE NIKITA SUDHIR	14	<i>[Signature]</i>
47	NIDVANKE ASHISH BHIM	12	<i>[Signature]</i>
48	PALKAR RUSHIKESH FULCHAND	13	<i>[Signature]</i>
49	PANASKAR SAYALI BAJIRAO	13	<i>[Signature]</i>
50	PARASHRAM PANDURANG PATIL	12	<i>[Signature]</i>
51	PATIL JITENDRA VASANT	13	<i>[Signature]</i>
52	PATIL SHUBHAM RAJENDRA	12	<i>[Signature]</i>
53	PAWAR CHANDRAKANT KAILAS	06	<i>[Signature]</i>
54	PRIYANKA RAMESH SURYAWANSHI	13	<i>[Signature]</i>
55	ROHIT SANDEEP SAWANT	13	<i>[Signature]</i>
56	SAGAR SANJAY JADHAV	07	<i>[Signature]</i>
57	SAIPRASAD NANDKUMAR SHINDE	17	<i>[Signature]</i>
58	SANKET SANDEEP PATIL	12	<i>[Signature]</i>
59	SATALE AVINASH HARISHCHANDRA	16	<i>[Signature]</i>
T ₂₀ 60	SATHE DHANANJAY DNYANESHWAR	16	<i>[Signature]</i>
61	SHAHIL PAWAR	14	<i>[Signature]</i>
62	SHINDE GANESH BALASO	11	<i>[Signature]</i>
63	SHINKAR PRATIK VIJAY	15	<i>[Signature]</i>
64	SUTAR RUSHIKESH HANUMANT	04	<i>[Signature]</i>
65	TAKBHATE SHUBHAM JAGADISH	10	<i>[Signature]</i>
66	TELGOTE NILESH DEORAO	09	<i>[Signature]</i>
67	UGWEKAR DHANANJAY SHRIKRISHNA	07	<i>[Signature]</i>
68	VICHARE PRATHAMESH DIPAK	04	<i>[Signature]</i>
69	WANKAR JAYESH RAMESH	08	<i>[Signature]</i>
70	YASIN RAMJAN MUJAWAR	11	<i>[Signature]</i>

Prof. A. H. Hant
 Subject Teacher

**SIDDHANT COLLEGE OF ENGINEERING**

Verified all entries & found correct

Jr. Supervisor's Name, Signature & Date

Seat No. (in figures) 35 Centre SCOE, sudumbre 4044Seat No. (in words) Fifty Four - Rahul Babulal KamthkarDay & Date : 29/03/2023 Examination : Mid term testSubject : Quality and reliability - Engg. Section : -Course / Paper No. - Medium of Answer : EnglishMain Ans. Book + No. of Supplements 0 = Total

Q. No	1	2	3	4	5	6	7	8	9	10	11	12	Total	Signature of Examiner
Marks	-	08	-	-	06	-	-	-	-	-	-	-	14/20	<u>fr</u>
Q. No	1	2	3	4	5	6	7	8	9	10	11	12	Total	Signature of Examiner
Marks														

Use of Coloured pencil or ink is strictly prohibited except in case of Diagrams and Sketches
(Write on both sides and start writing on this page)

Q2)

Seven quality tools :-

- 1) checksheet
- 2) Flow charts
- 3) Histograms
- 4) Pareto charts
- 5) Cause and effect diagram
- 6) Scatter diagram
- 7) Control charts

Scatter diagram :-

The scatter diagram graph is a pair of numerical data with one variable on each axis, to look for a relationship between them.

Following steps are involved in drawing and interpreting scatter diagram

- 1) select the two factor in which relationship is required to be studied.

- 2) Collect the data.
- 3) Draw the axes of scatter diagram.
- 4) Plot each set of data.
- 5) Interpretation of results.

Three types of relationship are recognised in scatter diagram.

1) Positive relationship -

An increase in driving factor cause increase in performance characteristics.



Fig. Positive correlation

2) Negative correlation -

The driving factor and performance factor are related inversally, i.e. an increase in the driving factor causes a decrease in the performance factor.

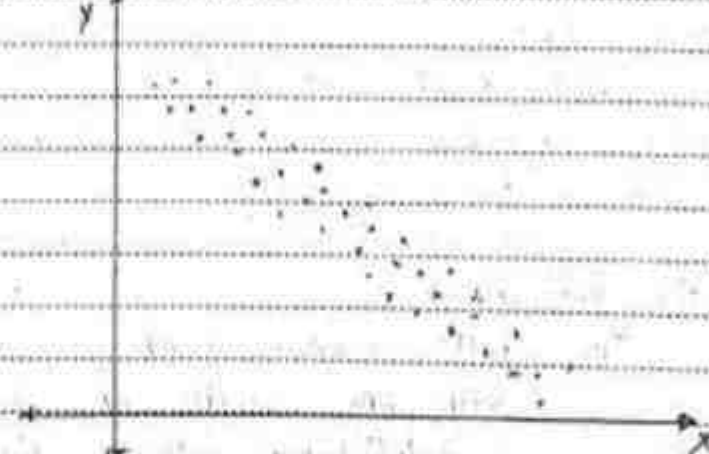


Fig. Negative correlation

3) No correlation -

If a variation in x-axis has no effect on value of characteristics on y-axis, these two factor said to be not related to each other.

Q1

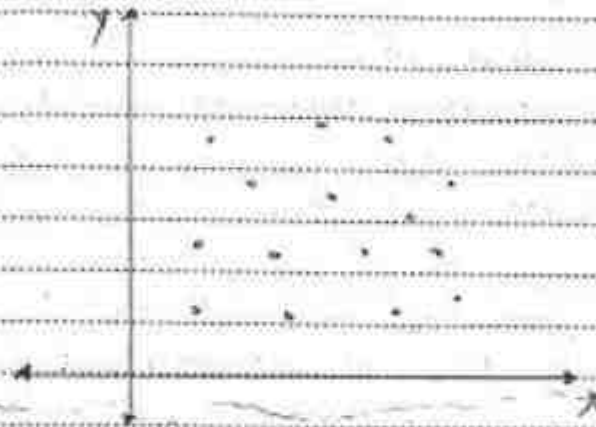


Fig. No. correlation



CAYMET'S
SIDDHANT COLLEGE OF ENGINEERING, SUDUMBARE
Department of Mechanical Engineering
End Term Test

Sub: Quality & Reliability Engg
Sub Code: 402050A
Faculty In-charge: Mr. Ashish H Raut

Date:- 17/05/2023
Times:- 2 hr
Max Marks: 40

- 1 a. Accelerometers of 350 numbers were tested for 120 hrs. and the number of failed accelerometers out of 350 accelerometers is tabulated as given below. Find the hazard rate reliability and tabulate the results

Time Interval (hrs.)	0-20	20-40	40-60	60-80	80-100	100-120
No. of failed accelerometers	157	73	55	33	20	12

6 CO3

- b. Explain Bath Tub Curve with neat sketch

4 CO3

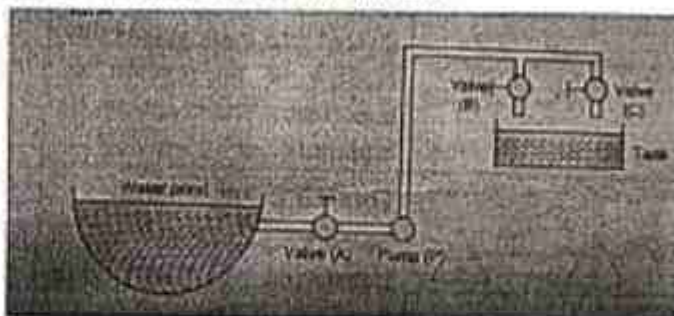
- 2 a. Using Conditional reliability method evaluate the reliability of the following system

10 CO4



- 3 a. Fig shows three valves A, B and C, a pump (P), a pipeline and a tank to collect water pumped from the pond. Construct the fault tree corresponding to the top event "no flow of water into the tank"

10 CO5



- 4 a. Write short note on

10 CO6

1. Preventive and Corrective maintenance
2. Reliability centred maintenance

ALL THE BEST

Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering
End Term Test

Class: BE Mech

Date: 17/15/2023
SEM-VIII (AY 2022-23)

Sub:- Q & RE

Marks:-40

Roll No.	Name of student	Marks	Sign
1	ABHISHEK KUMAR YADAV	19	Abhishek
2	AKASH DADASO JADHAV	19	Akash
3	ANIKET DATTATRAYA SASE	19	Sase
4	ANIKET SHIVAJI SAPNAR	16	Aniket
5	ANKIT GUPTA	26	Ankit
6	AODUT PRAVIN RAVASAHEB	15	Aodut
7	ASHUTOSH BAPUSAHEB TOUNDKAR	16	Ashutosh
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10	BIDAYE YASH RAMCHANDRA	12	Yash
11	CHAUDHARI ANUP HIRALAL	27	Anup
12	CHAVHAN ASHWINI SUKHDEV	14	Ashwini
13	DADASAHEB NANASAHEB PAWAR	20	Dadasaheb
14	DAHIVALKAR PUJA PRAVIN	27	Puja
15	DAUNDKAR RAJKUMAR BALASAHEB	15	Rajkumar
16	DESHMUKE AKASH SAMPAT	28	Akash
17	DINDE ARJUN YASHWANT	15	Arjun
18	DIPAK PRADIP KUSUMKAR	18	Dipak
19	DIXIT PRASHANT MANIKRAO	19	Prashant
20	GADE ADESH BALASAHEB	19	Adesh
21	GADE SANTOSH SARJERAO	27	Santosh
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24	GAVHANE AUDUMBAR BALIRAM	19	Audumbar
25	GAWADE AJAY MOHAN	21	Ajay
26	GHARE SAGAR VITTHAL	16	Sagar
27	GHURE DILIP DATTATRAY	18	Dilip
28	GUPTA KRISHNA DINESH	28	Krishna
29	HIRATOT SHRISHAIL NAGESHI	20	Shrishail
30	JADHAV SHUBHAM RAJENDRA	27	Shubham
31	JADHAV SIDDHESH KAILAS	18	Siddhesh
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Siddhant College of Engineering, Sudumbare

Department of Mechanical Engineering

End Term Test

Date:- 17/5/2023

Class: BE Mech

SEM-VIII (AY 2022-23)

Sub:- Q & RE

Marks:-40

Roll No.	Name of student	Marks	Sign
36	KSHIRSAGAR SADHANA SHANTLING	15	Sslc
37	KUMBHAR MADHAV TULASHIDAS	24	M. Kumbhar
38	KUMBHAR NARAYAN KALLAPPA	19	N. Kumbhar
39	LINGADE UMESH DILIP	20	Lingade U.D.
40	MANDALE SUNIL HARIBHAU	25	S. Mandale
41	MANE AKSHAY RAMLING	27	A. Mane
42	MANE TRUPTI JITENDRA	19	T. Mane
43	MANISH UMESH MOURYA	18	M. Manish
44	MANSI DEEPAK KOKANE	19	M. Mansi
45	MORE PRASAD DHARMARAJ	12	P. More
46	NAGARE NIKITA SUDHIR	16	N. Nagare
47	NIDVANCHE ASHISH BHIM	14	A. Nidvanche
48	PALKAR RUSHIKESH FULCHAND	13	R. Palkar
49	PANASKAR SAYALI BAJIRAO	19	S. Panaskar
50	PARASHRAM PANDURANG PATIL	21	P. Patil
51	PATIL JITENDRA VASANT	28	J. Patil
52	PATIL SHUBHAM RAJENDRA	15	S. Patil
53	PAWAR CHANDRAKANT KAILAS	27	C. Pawar
54	PRIYANKA RAMESH SURYAWANSHI	18	P. Priyanka
55	ROHIT SANDEEP SAWANT	19	R. Sawant
56	SAGAR SANJAY JADHAV	18	S. Sagar
57	SAIPRASAD NANDKUMAR SHINDE	27	S. Saiprasad
58	SANKET SANDEEP PATIL	27	S. Sanket
59	SATALE AVINASH HARISHCHANDRA	27	A. Satale
60	SATHE DHANANJAY DNYANESHWAR	27	S. Sathe
61	SHAHIL PAWAR	25	S. Shahil
62	SHINDE GANESH BALASO	21	G. Shinde
63	SHINKAR PRATIK VIJAY	16	P. Shinkar
64	SUTAR RUSHIKESH HANUMANT	09	R. Sutar
65	TAKBHATE SHUBHAM JAGADISH	18	S. Takbhate
66	TELGOTE NILESH DEORAO	22	N. Telgote
67	UGWEKAR DHANANJAY SHRIKRISHNA	20	D. Ugwekar
68	VICHARE PRATHAMESH DIPAK	18	P. Vichare
69	WANKAR JAYESH RAMESH	16	J. Wankar
70	YASIN RAMJAN MUJAWAR	23	Y. Yasin

Prof A H Raut
Subject Teacher

**SIDDHANT COLLEGE OF ENGINEERING**

Verified all entries & found correct

Jr. Supervisor's Name, Signature & Date

Seat No. (In figures) Roll no.: 11

Centre: SCOE-4044

Seat No. (In words) Anup H. Chaudhari

Day & Date: 17/05/23 - Tuesday

Examination: End term

Subject: QRE

Section:

Course / Paper No. B.E. Mech

Medium of Answer: English

Main Ans. Book + No. of Supplements

1 + 00

= Total

01

Q. No	1	2	3	4	5	6	7	8	9	10	11	12	Total	Signature of Examiner
Marks	4	7	7	7									27/40	Arj
Q. No	1	2	3	4	5	6	7	8	9	10	11	12	Total	Signature of Examiner
Marks														

Use of Coloured pencil or ink is strictly prohibited except in case of Diagrams and Sketches
(Write on both sides and start writing on this page)

Q. 1

a) Explain Bath tub curve with neat Sketch.



1) A typical curve showing three basic modes of failure is & it is generally called as 'bath tub' curve because of its shape.

2) The life of human being also was found to follow similar curve i.e. childhood (early failures), normal age period from 10 years to 45 years (old age 45 onwards (wear out period)).

3) A large number of mechanical & electronic components or systems has generally same failure characteristic.

4) Region I (period to to t.) Infant mortality.

In front ~~for~~ failure or early failures caused due to reason as defective materials, poor design, poor quality control.

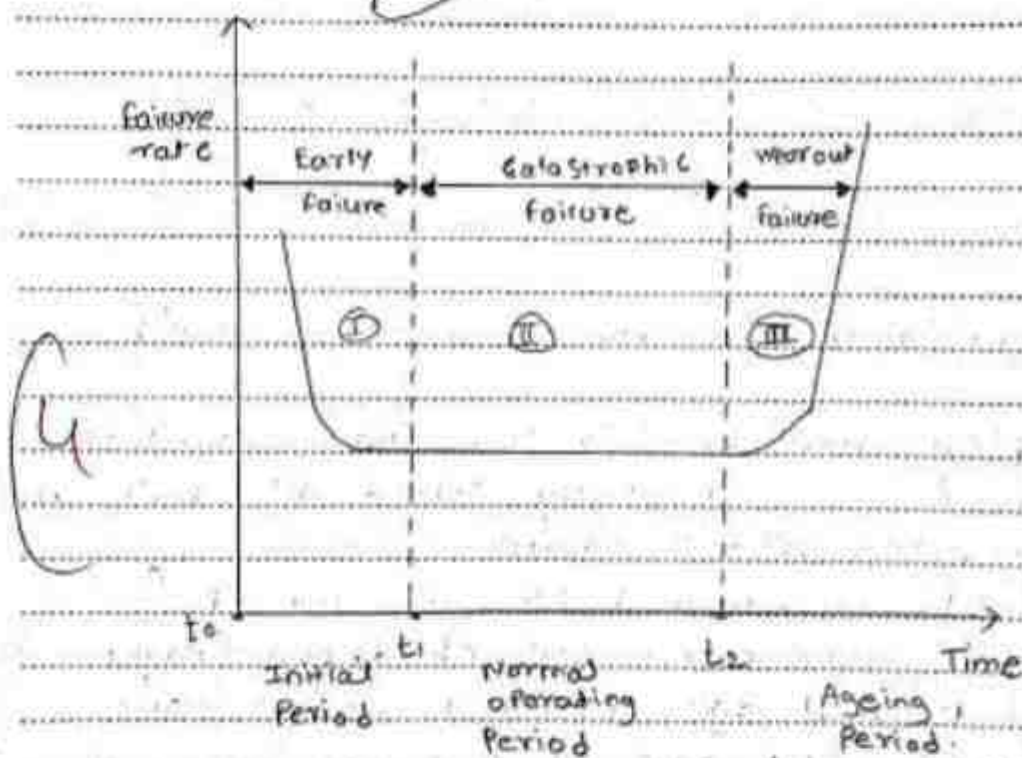
5] Region II (Period $t_1 - t_2$) Normal operation Period :-

As the defective components are replaced by newer ones the reliability of system increases. The next phase of failures occurs in ~~Normal~~ ^{for} Normal (operating) period.

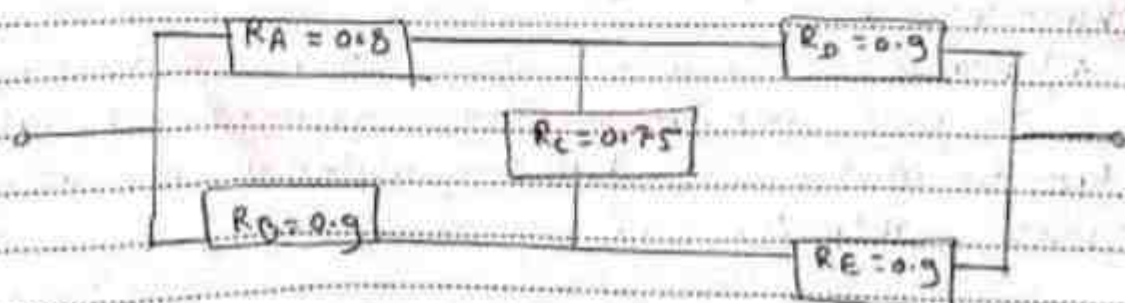
These failure are also known as random failure.

6] Region III (Period t_2 onwards) :- wear out / Aging Period.

After time t_2 wear out or aging failure occurs due to excessive wear after expected useful design life has been exceeded.

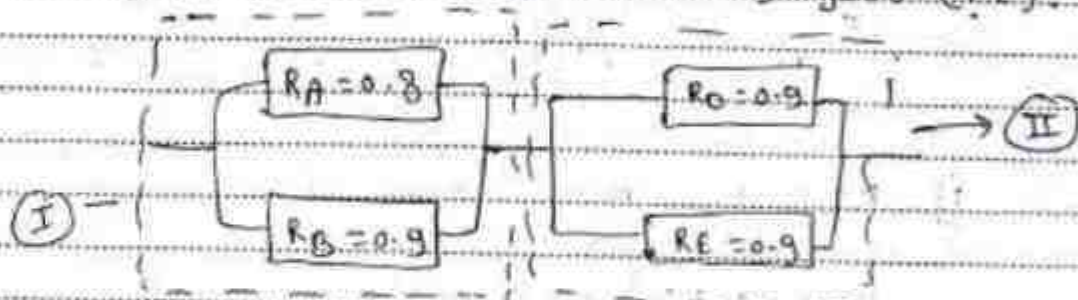


Q.2) Using conditional reliability method evaluate the reliability of following



→ Critical component is $R_C = 0.75$

I] when critical component is good (R_C).



$$1) R_I = 1 - [(1 - R_A)(1 - R_B)]$$
$$= 1 - [(1 - 0.8)(1 - 0.9)]$$

$$R_I = 0.98$$

$$2) R_{II} = [1 - (1 - R_C)(1 - R_E)]$$
$$= 1 - [(1 - 0.9)(1 - 0.9)]$$

$$R_{II} = 0.99$$

3) Reliability of system when component is in Series

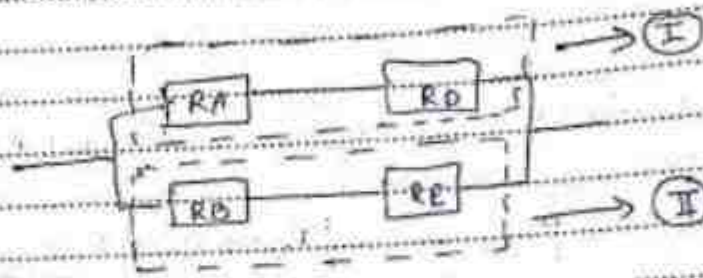
$$R_1 = R_I \times R_{II}$$

$$= 0.98 \times 0.99$$

$$R_1 = 0.97$$

~~Good~~ reliability = $R_1 = 0.97$

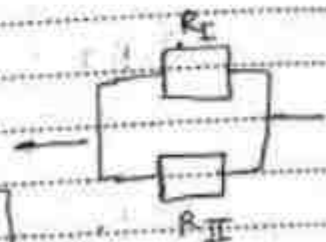
I] when Critical component is bad.



$$1) R_I = R_A \times R_D \\ = 0.8 \times 0.9 \\ \boxed{R_I = 0.72}$$

$$2) R_{II} = R_B \times R_E \\ = 0.9 \times 0.9 = 0.81$$

$$3) R_{III} = 1 - [(1 - R_I)(1 - R_{II})] \\ = 1 - [(1 - 0.72)(1 - 0.81)] \\ = 1 - [0.08 \times 0.19] \\ = 1 - 0.0152 \\ \boxed{R_{III} = 0.9848}$$



II] Substituting values in formulae:-

$$R_S = \left[\begin{array}{l} \text{Reliability of} \\ \text{system when} \\ \text{comp is good} \end{array} \right] \times [\text{good reliability}] +$$

$$\left[\begin{array}{l} \text{Reliability of} \\ \text{system when} \\ \text{comp is bad} \end{array} \right] \times [\text{Bad reliability}]$$

$$= 0.97 \times 0.75 + 0.94 \times (1 - 0.75)$$

$$\boxed{R_S = 0.96}$$

Q. 1] Write short note on :-

1] Preventive & corrective maintenance :-

1] In preventive maintenance system is periodically inspected, some components are replaced lubrication, checked & adjustment are made before system fails.

2] Preventive maintenance is intended to eliminate costly repairs involved during corrective type of maintenance stage when system fails.

3] Preventive maintenance can be divided into following types of maintenance.

a] Running maintenance (on-line maintenance), maintenance which can only be carried out whilst the unit or plant is in use.

b] Shutdown maintenance (offline), maintenance which can only be carried out when plant or unit is not in use.

a] Time-based preventive maintenance :-

The type of maintenance is effective when failure of system is time independent & system is expected to wear out.

2] Corrective maintenance :-

Corrective maintenance is used after system failure. The objective of corrective maintenance is to bring system from failed state to operating state the operating as possible to increase availability.

Corrective maintenance is also known as repair & can include any or all following steps.

i] Detection or verification.

ii] Isolation

iii] Disassembly

iv] Interchange

v] Reassembly

vi] Alignment

vii] Start up

2] Reliability Centred maintenance

→ 1) Reliability Centred maintenance (RCM) is a systematic methodology used to identify the preventive maintenance related tasks necessary for realizing inherent reliability of equipment at lowest cost.

2) RCM goals:- To establish design related priorities that can facilitate preventive maintenance in effective manner.

• To plan preventive maintenance tasks that can ensure safety & reliability to their original levels in the event of system or equipment deterioration.

3] RCM Principles:-

1) focus on maintaining system & equipment function.

2) Provide consistency in maintenance of all types of products.

4] RCM process:-

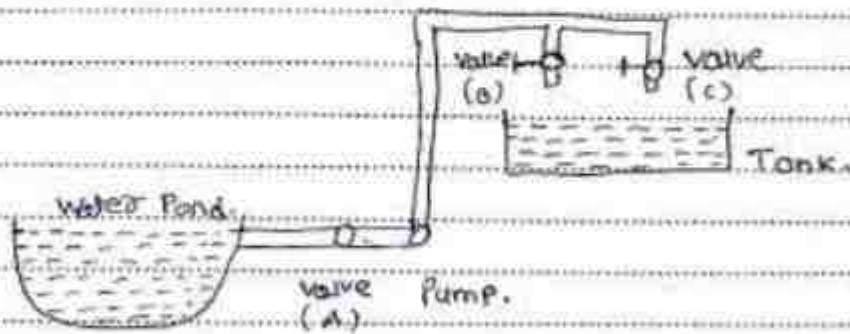
1) Identify high priority items with respect to maintenance.

2) Gather all necessary failure data.

3) Group maintenance requirements.

4) Perform fault tree analysis.

Q. 4 Fig. shows three valves A, B & C, a pump, a pipeline & a tank to collect water pumped from the pond.
 → Construct the fault tree corresponding to the top event "no flow of water into the tank".

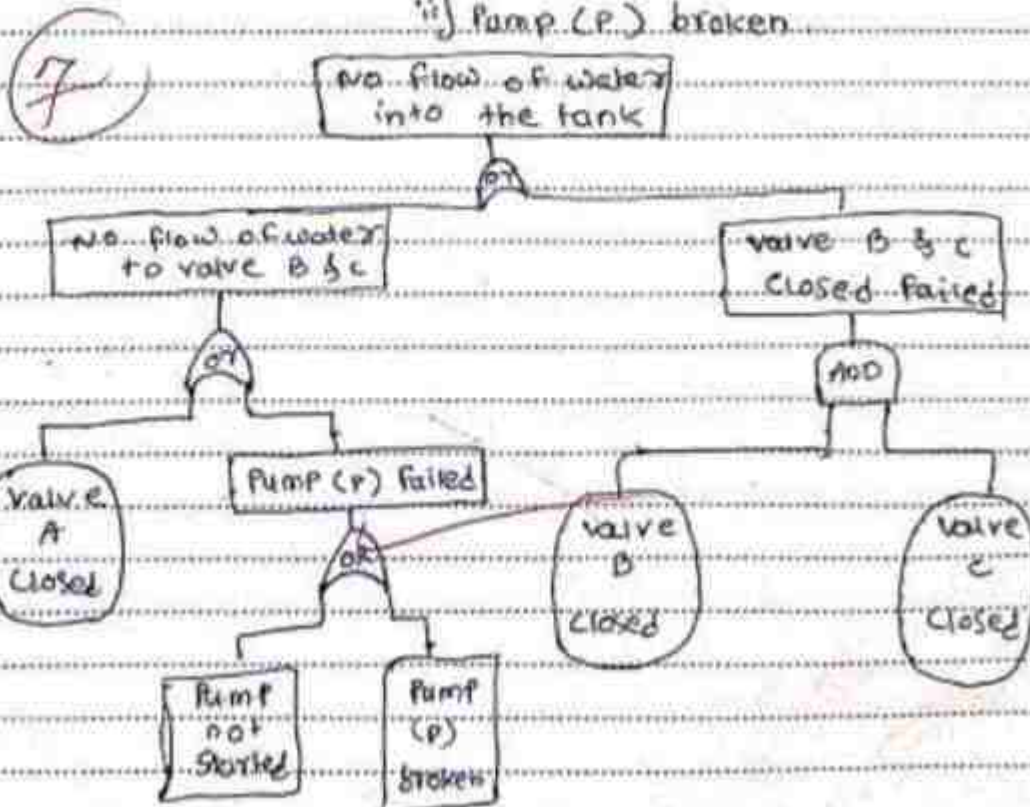


→ Solⁿ: Top event - No flow of water into tank
 Primary events.

- (a) Valve B & C closed (failed).
- (b) ~~Pump P~~ failed no flow of water to valve B & C.

Secondary events:-

- a) valve A closed (failed).
- b) Pump P failed.
 - i] Pump (P) not started.
 - ii] Pump (P) broken.



Siddhant College of Engineering, Sudumbare
Department of Mechanical Engineering

BE (Mech)

SEM-II 2022-23

Q & RE Submission sheet

Roll No.	Name of student	Asgn. 1	Asgn 2	Asgn 3	M.Term Test	End Term Test	INSEM Marks	Student Sign
		20	20	20	20	40	30	
1	ABHISHEK KUMAR YADAV	12	13	17	16	24	21	Abhishek
2	AKASH DADASA JADHAV	10	16	12	09	19	18	Akash
3	ANIKET DATTATRAYA SASE	15	12	17	11	19	16	SASE
4	ANIKET SHIVAJI SAPNAR	11	9	11	12	16	14	Aniket
5	ANKIT GUPTA	11	14	16	16	26	17	Ankit
6	AQUDUT PRAVIN RAVASAHEB	14	12	13	13	15	12	AQUDUT
7	ASHUTOSH BAPUSAHEB TOUNDKAR	13	15	11	11	16	12	Ashutosh
8	AWAGHADE ATISH SHANKAR	13	11	13	16	28	13	Atish
9	BHARAT BARKU BORYE	10	11	11	10	23	16	Bharat
10	BIDAYE YASH RAMCHANDRA	11	10	10	11	12	08	Yash
11	CHAUDHARI ANUP HIRALAL	17	18	15	11	27	15	Anup
12	CHAVHAN ASHWINI SUKHDEV	16	13	10	12	14	15	Ashwini
13	DADASAHEB NANASAHEB PAWAR	11	7	10	12	20	18	Dadash
14	DAHIVALKAR PUJA PRAVIN	13	17	14	08	27	16	Dahivalkar
15	DAUNDKAR RAJKUMAR BALASAHEB	12	7	15	10	15	15	Daundkar
16	DESHMUKH AKASH SAMPAT	10	12	12	10	28	07	Akash
17	DINDE ARJUN YASHWANT	10	12	13	11	15	AB	Dinde
18	DIPAK PRADIP KUSUMKAR	12	12	16	15	18	16	Dipak
19	DIXIT PRASHANT MANIKRAO	13	18	11	11	19	09	Prashant
20	GADE ADESH BALASAHEB	13	12	12	12	19	13	Adesh
21	GADE SANTOSH SARJERAO	14	16	15	16	27	15	Santosh
22	GAIKWAD KUNDAN KISHOR	12	12	13	13	13	09	Kundan
23	GANESH TULSHIDAS KUMBHAR	11	12	23	11	24	17	Ganesh
24	GAVHANE AUDUMBAR BALIRAM	12	14	11	14	19	23	Audumbar
25	GAWADE AJAY MOHAN	15	12	09	15	21	13	Ajay
26	GHARE SAGAR VITTHAL	11	11	12	12	16	07	Sagar
27	GHURE DILIP DATTATRAY	11	18	10	14	18	19	Dilip
28	GUPTA KRISHNA DINESH	11	13	13	17	28	21	Krishna
29	HIRATOT SHRISHAIL NAGESHI	08	13	11	12	20	18	Shrishail
30	JADHAV SHUBHAM RAJENDRA	12	12	12	14	27	05	Shubham
31	JADHAV SIDDHESH KAILAS	11	11	8	14	18	12	Siddhesh
32	JARHAD MAYUR POPAT	12	12	12	12	13	06	Mayur

		A ₁	A ₂	A ₃	T ₁	T ₂	IN	
33	KADAM AJINKYA BALIBA ✓	11	12	9	06	12	10	Kadam
34	KAMBALE NAGANATH BHARAT ✓	10	11	13	13	13	18	Kambale
35	KAMTIKAR RAHUL BABULAL ✓	11	14	12	14	14	15	Kamti
36	KSHIRSAGAR SADHANA SHANTLING	12	12	10	11	15	14	Kshirsagar
37	KUMBHAR MADHAV TULASHIDAS ✓	13	14	15	12	24	16	Kumbhar
38	KUMBHAR NARAYAN KALLAPPA ✓	16	15	12	15	19	18	Kumbhar
39	LINGADE UMESH DILIP ✓	11	07	7	16	20	12	Lingade
40	MANDALE SUNIL HARIBHAU ✓	11	12	12	09	25	13	Mandale
41	MANE AKSHAY RAMLING	15	13	14	15	27	14	Mane
42	MANE TRUPTI JITENDRA ✓	16	10	09	15	19	19	Mane
43	MANISH UMESH MOURYA ✓	09	13	14	08	18	16	Manish
44	MANSI DEEPAK KOKANE ✓	11	11	12	14	19	17	Mansi
45	MORE PRASAD DHARMARAJ ✓	11	07	10	16	12	15	More
46	NAGARE NIKITA SUDHIR	11	16	14	12	15	12	Nagare
47	NIDVANICHE ASHISH BHIM	12	11	13	12	14	06	Nidvaniche
48	PALKAR RUSHIKESH FULCHAND	13	12	12	13	13	16	Palkar
49	PANASKAR SAYALI BAJIRAO ✓	14	12	14	13	19	19	Panaskar
50	PARASHRAM PANDURANG PATIL ✓	10	13	14	12	21	18	Parashram
51	PATIL JITENDRA VASANT ✓	15	13	11	13	28	22	Patil
52	PATIL SHUBHAM RAJENDRA ✓	13	13	12	12	15	17	Patil
53	PAWAR CHANDRAKANT KAILAS ✓	10	14	15	6	27	16	Pawar
54	PRIYANKA RAMESH SURYAWANSHI ✓	11	13	12	13	18	22	Priyanka
55	ROHIT SANDEEP SAWANT ✓	10	17	13	13	19	22	Rohit
56	SAGAR SANJAY JADHAV ✓	10	13	11	7	18	16	Sagar
57	SAIPRASAD NANDKUMAR SHINDE ✓	12	14	11	17	27	15	Shinde
58	SANKET SANDEEP PATIL ✓	13	17	14	12	27	19	Sanket
59	SATALE AVINASH HARISHCHANDRA	15	13	13	16	27	17	Satale
60	SATHE DHANANJAY DNYANESHWAR	08	12	13	15	27	13	Sathe
61	SHAHIL PAWAR	13	17	14	14	25	22	Shahil
62	SHINDE GANESH BALASO	12	17	14	11	21	19	Shinde
63	SHINKAR PRATIK VIJAY	13	13	10	15	16	18	Shinkar
64	SUTAR RUSHIKESH HANUMANT	12	13	12	4	03	15	Sutar
65	TAKBHATE SHUBHAM JAGADISH	11	11	11	9	18	18	Takbhate
66	TELGOTE NILESH DEORAO	12	11	10	10	22	13	Telgote
67	UGWEKAR DHANANJAY SHRIKRISHNA	14	16	14	7	20	12	Ugwekar
68	VICHARE PRATHAMESH DIPAK	17	17	14	4	18	12	Vichare
69	WANKAR JAYESH RAMESH	13	12	11	8	16	12	Wankar
70	YASIN RAMJAN MUJAWAR	12	13	14	11	23	16	Yasin

Prof. A. H. Raut
Subject Teacher

Siddhant College of Engineering
Department of Mechanical Engineering
Academic Year 2022-23, Semester II.
Subject: Energy Engineering, 402048 Continuous Assessment Sheet.

PRN.	Name of The Student.	Practical	Practical	Practical	Practical	Practical	Practical	Practical	Practical	Assignment	Assignment	Practical	Mid Test	Attendance	Marked out of 100	Marked out of 25
72165753C	Gade Adesh Balasahab	7	8	7	8	8	7	8	8	8	7	18	42	16	152	20
72165703E	Ganesh Tulashidas Kumbhar	8	9	7	8	9	7	8	8	8	7	20	45	19	164	22
72165772K	Ghare Sagar Vitthal	9	7	8	7	7	8	7	7	9	7	17	43	17	153	20
72165791F	Jitendra Vasant Patil	7	7	7	8	7	7	8	7	7	9	25	41	20	160	21
72165775D	Krishna Gupta	9	8	8	7	8	8	7	8	8	8	23	32	15	149	20
72165770C	Kundan Kishor Gallowad	9	8	7	8	8	7	8	8	7	7	21	40	20	158	21
72165765G	Kusumkar deepak pradip	9	9	7	8	9	7	8	9	9	9	17	33	20	154	20
72165784C	Madhav Tulashidas Kumbhar	7	9	7	8	9	7	8	9	9	8	18	44	18	161	21
72165785M	Mane Trupti Jitendra	8	7	8	8	7	8	8	7	9	9	22	44	20	160	22
72029376G	Manish Umesh Mourya	9	8	8	8	8	8	8	8	8	7	17	37	17	151	20
72165781J	Manoj Kokane	9	8	7	8	8	7	8	8	9	7	20	31	19	149	20
72165779G	Mayur Popat Jarhal	7	7	7	8	7	7	8	7	7	7	20	33	18	143	19
71913972E	more prasad dharmaraj	7	8	7	7	8	7	7	8	7	8	18	35	19	146	19
72165780L	Naganath Bharat kumbale	8	8	7	7	8	7	7	8	8	7	23	42	20	160	21
72165706K	Nagre Nikita Sudhir	8	8	8	8	8	8	8	8	9	7	25	35	18	156	21
72165707H	NARAYAN KALLAPPA KUMBHAR	8	7	8	7	7	8	7	7	7	9	25	31	20	151	20
72165810F	Nidesh Telgote	7	8	8	7	8	8	7	8	9	7	22	34	17	150	20
72165792D	Parashram Pandurang Patil	7	9	8	7	9	8	7	9	7	8	18	34	15	146	19
72165794L	Pawar Chandrakant Kalas	7	7	7	8	7	7	8	7	7	8	19	42	17	151	20
72165795J	Pawar Dadasahab Nanasaheb	9	9	8	7	9	8	7	9	9	7	21	36	18	157	21

Prof. Sagar Upendra Deshpande
Subject Incharge

Dr. P. A. Makasare
HOD

CAYMET'S

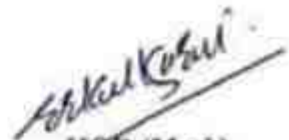
SIDDHANT COLLEGE OF ENGINEERING, SUDUMBARE
DEPARTMENT OF MECHANICAL ENGINEERING

Date - 13/02/2023

NOTICE

As per TE (2019 PAT.) Mechanical syllabus all TE Mechanical Engineering students are instructed to give your respective choice for **Internship/Mini project** on or before 17/02/2023 (Friday) for more details contact to respective guide allotted.

Also those who are going for the Internship are hitherto instructed to collect "Letter to Company" from student section.


HOD (Mech)

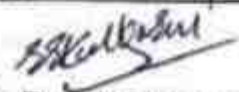
CAYMET's
Siddhant College of Engineering
Mechanical Engineering Department
TE Mech (2019 pat) AY 2022-23

Allocation of Mini Project/Internship Group list with Guide Name

Sr. No	Group No.	Candidate Name	Name of Guide	Sign of Guide
1	1	AAGHADE RUSHIKESH SANJAY	Dr. P.A.MAKASARE	
2		AMBRE AISHWARYA NITIN		
3		ANIKET CHAVAN		
4		BANASE PRATIK SHIVRAJ		
5		BARAMADE GANESH KIRAN		
6	2	BHANDARI JAYESH GANPAT	Mr. B. D. GARJE	
7		BHOSALE AKSHAY POPAT		
8		BIRDAWADE PRAJAKTA MAHESH		
9		BORATE KAMLESH RAJENDRA		
10		BOTKAR PRATIKSHA PRAKASH		
11	3	CHOUGULE SHITAL MALLAPA	Mr. B. B. KEDAR	
12		GAIKWAD SUPRIYA BHARAT		
13		GAURAV SUNIL DEORE		
14		GAUTAM SHAILESH CHHOTELAL		
15		GODSE SARTHAK BALASAHEB		
16	4	GUNJAL SHUBHAM DATTU	Mr. S.U. DESHPANDE	
17		HARSHALA RAVINDRA SHIRKE		
18		HONAWALE SURAJ NITIN		
19		INDURKAR BHUPESH RAJENDRA		
20		INGAVALE VIJAYSINGH PARBATI		
21	5	JADHAV LAXMI MAHADEV	Mr. V.S. MUNDE	
22		JADHAV PRIYA CHHOTURAM		
23		JADHAV RAHUL RANGRAO		
24		JADHAV VAJJANATH MADHUKARRAO		
25		KADAM PRAVIN SHIVAJI		
26	6	KADUSKAR ADITYA BHAUSAHEB	Mr. P.P. GEDAM	
27		KATURE SHRINIVAS EKNATH		
28		KAWALE SHIVAM SADASHIV		
29		KEDARI GAURAV ASHOK		
30		KHAMBE ANIKET NARAYAN		
31	7	KHANDARE SAHIL BHASKARRAO	Ms. S.V. CHAMBHARE	
32		KOLLI HIRITHIK SIDDANNA		
33		KULKARNI ANUSHA PADMAKAR		
34		KUMBHAR SANDESH GORAKHNATH		
35		KURADE SAMPADA RAJARAM		
36	8	LOKHANDE AMIT SURESH	Ms. S. B. GHOSE	
37		MAHALKAR BHIWA LAXMAN		
38		MAJGAONKAR MOHAMMAD TARIQ BA		
39		NAIK OMSHRI AJAY		
40		NANNAWARE GEETA RAMESH		

41	9	NIKAM HARSHADA RAMCHANDRA	Mr A. H. RAUT	
42		PALKAR SAVITRI MARUTI		
43		PATIL BHUSHAN SHANTARAM		
44		PATIL NIKITA VILAS		
45		PAWAR PRAJWAL BHARAT		
46	10	PAWAR PRAMOD SHANKAR	Mr. R. R. KULKARNI	
47		PAWAR SAMARTH DINKAR		
48		PAWAR SHRUTI RAMCHANDRA		
49		PAWAR SWAPNIL RAJU		
50		RAUT SUMIT MARUTI		
51	11	SABEER IMTIHAJAHMAD SHAIKH	Ms. S. B. GHOSE	
52		SAURABH MARUTI MEDGE		
53		SAWANT SAURABH DILIP		
54		SHAHU SANJAY KAKAD		
55		SINGH ABHAY SATENDAR		
56	12	SONAVANE PRATHAMESH GIRISH	Mr. R. R. KULKARNI	
57		TAGAD BHUSHAN VISHVANATH		
58		TELANG PRASHANT VINAYAK		
59		TIKANDÉ NIKHIL RAMDAS		
60		UDUGADE KISHOR DADASO		
61	13	UGALE VAIBHAV SHANKARRAO	Mr. V.S. MUNDE	
62		UPASANI SUYASH GANGADHAR		
63		VARADE BHUSHAN VISHNU		
64		WAGHLE YUVRAJ SHAM		
65		YADYNESH NITIN KHACHANE		


Prof. V.S. Munde
Mini Project Coordinator


Dr. P.A. Makasre
HOD (MECH)

CAYMET'S

SIDDHANT COLLEGE OF ENGINEERING, SUDUMBARE
DEPARTMENT OF MECHANICAL ENGINEERING

NOTICE

03/04/2023

All the students of T. E. Mechanical Engineering are hereby informed that 1st Review has been scheduled on 07/04/2023 Friday.

All the Mini-project group members/ Internship doing students shall come prepared with followings.

➤ For Mini-Project group :-

- Experimentation readings.
- Calculations and Result.
- A Primary copy of Project Report.

➤ For Internship doing Students :-

- Internship Diary/ Internship Workbook.
- Attendance record.

All are informed to remain present for this review.

Venue: CAD/CAM lab.

Time: 10:30 a.m. onwards.


HOD (Mech)

CAYMET's
Siddhant College of Engineering
Mechanical Engineering Department
TE Mech (2019 pat) AY 2022-23
Review I

Date:- 07/04/2023.

Sr. No	Group No.	Candidate Name	Marks (50)	Name of Guide	Sign of Guide
1	1	AAGHADE RUSHIKESH SANJAY	39	Dr. P.A.MAKASARE	
2		AMBRE AISHWARYA NITIN	40		
3		ANIKET CHAVAN	39		
4		BANASE PRATIK SHIVRAJ	40		
5		BARAMADE GANESH KIRAN	39		
6	2	BHANDARI JAYESH GANPAT	39	Mr. B. D. GARJE	
7		BHOSALE AKSHAY POPAT	40		
8		BIRDAWADE PRAJAKTA MAHESH	41		
9		BORATE KAMLESH RAJENDRA	39		
10		BOTKAR PRATIKSHA PRAKASH	37		
11	3	CHOUGULE SHITAL MALLAPA	41	Mr. B. B. KEDAR	
12		GAIKWAD SUPRIYA BHARAT	42		
13		GAURAV SUNIL DEORE	40		
14		GAUTAM SHAILESH CHHOTELAL	41		
15		GODSE SARTHAK BALASAHEB	40		
16	4	GUNJAL SHUBHAM DATTU	39	Mr. S.U. DESHIPANDE	
17		HARSHALA RAVINDRA SHIRKE	39		
18		HONA WALE SURAJ NITIN	39		
19		INDURKAR BHUPESH RAJENDRA	38		
20		INGVALE VIJAYSINGH PARBATI	42		
21	5	JADHAV LAXMI MAHADEV	39	Mr. V.S. MUNDE	
22		JADHAV PRIYA CHHOTURAM	39		
23		JADHAV RAHUL RANGRAO	37		
24		JADHAV VAJANATH MADHUKARRAO	45		
25		KADAM PRAVIN SHIVAJI	42		
26	6	KADUSKAR ADITYA BHAUSAHEB	40	Mr. P.P. GEDAM	 12-07-23
27		KATURE SHRINIVAS EKNATH	41		
28		KAWALE SHIVAM SADASHIV	40		
29		KEDARI GAURAV ASHOK	39		
30		KHAMBE ANIKET NARAYAN	40		
31	7	KHANDARE SAHIL BHASKARRAO	40	Ms. S.V. CHAMBHARE	
32		KOLLI HRITHIK SIDDANNA	41		
33		KULKARNI ANUSHA PADMAKAR	41		
34		KUMBHAR SANDESH GORAKHNATH	39		
35		KURADE SAMPADA RAJARAM	42		
36	8	LOKHANDE AMIT SURESH	40	Ms. S. B. GHOSE	
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39		NAIK OMSHRI AJAY	37		
40		NANNAWARE GEETA RAMESH	42		
41		NIKAM HARSHADA RAMCHANDRA	43		

42	9	PALKAR SAVITRI MARUTI	44	Mr. A. H. RAUT	<u>A +</u>
43		PATIL BHUSHAN SHANTARAM	43		
44		PATIL NIKITA VILAS	44		
45	10	PAWAR PRAJWAL BHARAT	43	Mr. R. R. KULKARNI	<u>sekulkarni</u>
46		PAWAR PRAMOD SHANKAR	37		
47		PAWAR SAMARTH DINKAR	37		
48		PAWAR SHRUTI RAMCHANDRA	37		
49		PAWAR SWAPNIL RAJU	42		
50	11	RAUT SUMIT MARUTI	44	Ms. S. B. GHOSE	<u>gh</u>
51		SABEER IMTIHAJAHMAD SHAIKH	39		
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53		SAWANT SAURABH DILIP	40		
54		SHAHU SANJAY KAKAD	41		
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56		SONAVANE PRATHAMESH GIRISH	42		
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58		TELANG PRASHANT VINAYAK	37		
59		TIKANDE NIKHIL RAMDAS	42		
60	13	UDUGADE KISHOR DADASO	37	Mr. V.S. MUNDE	<u>munde</u>
61		UGALE VAIBHAV SHANKARRAO	43		
62		UPASANI SUYASH GANGADHAR	44		
63		VARADE BHUSHAN VISHNU	44		
64		WAGHLE YUVRAJ SHAM	40		
65		YADYNESH NITIN KHACHANE	43		

Prof. V.S. Munde
Mini Project Coordinator

Dr. P.A. Makasre
HOD (MECH)

CAYMET'S

SIDDHANT COLLEGE OF ENGINEERING, SUDUMBARE
DEPARTMENT OF MECHANICAL ENGINEERING

NOTICE

26/05/2023

All the students of T. E. Mechanical Engineering are hereby informed that 2nd Review has been scheduled on 31/05/2023 Wednesday.

All the Mini-project group members/ Internship doing students shall come prepared with followings.

➤ For Mini-Project group :-

- Result and Conclusion,
- A copy of Project Report.

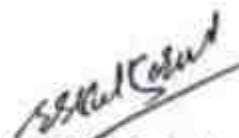
➤ For Internship doing Students :-

- Internship Diary/ Internship Workbook.
- Attendance record.
- Internship Report.
- Completion Certificate.

All are informed to remain present for this review.

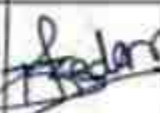
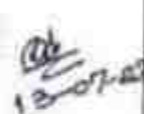
Venue: CAD/CAM lab.

Time: 11:30 a.m. onwards.


HOD (Mech)

CAYMET's
Siddhant College of Engineering
Mechanical Engineering Department
TE Mech (2019 pat) AY 2022-23
Review II

Date:- 31/05/2023

Sr. No	Group No.	Candidate Name	Marks (50)	Name of Guide	Sign of Guide
1	1	AAGHADE RUSHIKESH SANJAY	40	Dr. P.A.MAKASARE	
2		AMBRE AISHWARYA NITIN	41		
3		ANIKET CHAVAN	41		
4		BANASE PRATIK SHIVRAJ	39		
5		BARAMADE GANESH KIRAN	39		
6	2	BHANDARI JAYESH GANPAT	40	Mr. B. D. GARJE	
7		BHOSALE AKSHAY POPAT	39		
8		BIRDAWADE PRAJAKTA MAHESH	40		
9		BORATE KAMLESH RAJENDRA	40		
10		BOTKAR PRATIKSHA PRAKASH	39		
11	3	CHOUGULE SHITAL MALLAPA	40	Mr. B. B. KEDAR	
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V.S. Munde
Prof. V.S. Munde
Mini Project Coordinator

P.A. Makasre
Dr. P.A. Makasre
HOD (MECH)

**A
INTERNSHIP TRAINING
REPORT
ON
" LEENA ENGINEERING WORKS, SOLAPUR."**

**Submitted By: -
Miss. Harshala R. Shirke**

(PRN NO: -72297693D)

In partial fulfillment of the requirements for the award of the degree of

**BACHELOR OF TECHNOLOGY
IN
MECHANICAL ENGINEERING
To**

**Savitribai Phule Pune University,
Pune**



**DEPARTMENT OF MECHANICAL ENGINEERING
CAYMET'S
SIDDHANT COLLEGE OF ENGINEERING**

Academic Year: - 2022- 23



CAYMET'S
SIDDHANT COLLEGE OF ENGINEERING

CERTIFICATE

This is to certify that the vocational in- plant training in "**LEENA ENGINEERING WORKS, SOLAPUR.**" has been completed successfully and the report of the same has been submitted by '**Miss. Harshala R. Shirke** of third year (Mechanical Engineering) PRN NO: -72297693D in the partial fulfillment of the curriculum laid by **Savitribai Phule Pune University, Pune** during the academic year 2022- 23.


Mr. S.U. Deshapande
Sub Teacher



Dr. L.V. Kamble
Principal


Dr. Prandy Makasare
Head Mech. Engg. Dept.

SIDDHANT COLLEGE OF ENGINEERING



Leena

ENGINEERING WORKS

Plot No. 156, Industrial Estate, Hotgi Road, Solapur 413 003

Tel : (0217) 2601501 | Email : leenaengwks@yahoo.co.in

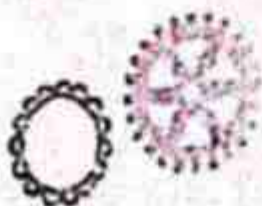
Certificate

This is to certify that Mrs. Harshala Ravindra Shinde
of S.C.O.F. PUNE. Roll No. TEME16
has completed his In Plant Training in our works from 20-02-23
to 20-03-23.

He has taken training on CNC VMC and Conventional Machines.



Leena
ENGINEERING WORKS
S. S. Bahule
CEO





SEM- I (2021-22)
2021

Class:- BE (IT)

Date :24th Sept 2021

Notice (Project Review-I)

All the students of BE Information Technology Engineering are hereby informed that, **Project Review-I** is scheduled on **1st October, Friday at 11.00 am.** All the Project Groups are supposed to contact the respective Guides and discuss the status of the project before. Project Groups Should Prepare the Presentation (PPT) for review. Following Points to should be included in Presentation:

1. Introduction
2. Problem statement
3. Objectives
4. Concept
5. Plan (Complete Plan to Finish the Project)
6. Literature Review

This review has weightage of 50% of Term work marks. Project Groups should prepare the Presentation accordingly.

All the Group members should be present at the time of Project Review.


Prof. Rashmi Kulkarni
Project coordinator
(9689910756)




Dr. B. Gupta
Head of Department (IT)

Head of Info. Tech. Dept.
Siddhant College of Engineering
Sudumbare, Maval, Pune-412 109.



Siddhant College of Engineering.

(Approved by AICTE, Recognized by Govt. of Maharashtra and Affiliated to S.P. Pune University & MSBTE)

Department of Information and Technology

SEM-I (2021-22)

Class:- BE (IT)

Date :24th Sept 2021

Project Review I Schedule

Pane 11	Date	Time	Project Group No	Location	Expert 1	Expert 2
1			1,2	C19	Prof. R. G. Kulkarni	Prof. S. Rangdale
			5, 6			
			8			
2	01/10/2021 Friday	11.00 AM to 1:00 PM	7,9, 10	C21	Prof. C. B. Sharma	Prof. A. Bhosale
5			3, 4	C-23	Prof. J. M. Pingalkar	Prof. R. G. Kulkarni

Prof. Rashmi Kulkarni
Project coordinator
(9689910756)



Dr. B. Gupta
Head of Department (IT)

Head of Info. Tech. Dept.
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Department of Information and Technology

SEM- I (2021-22)

Class:- BE (IT)

Date :11th Nov 2021

Notice (Project Review -II)

All the students of BE Information Technology are hereby informed that, **Project Review-II** is scheduled on **15th November ,Monday at 10.00 am**. All the Project Groups are supposed to contact the respective Guides and discuss the status of the project before. Project Groups Should Prepare the Presentation (PPT) for review. Following Points to should be included in Presentation:

1. Introduction
2. Problem statement
3. Objectives
4. Concept
5. Plan (Complete Plan to Finish the Project)
6. Literature Review
7. Current status of the Project

This review has weightage of 50% of Term work marks. Project Groups should prepare the Presentation accordingly.

All the Group members should be present at the time of Project Review.

Prof. Rashmi Kulkarni
Project coordinator
(9689910756)



Dr. B. Gupta
Head of Department (IT),

Head of Info. Tech. Dept.
Siddhant College of Engineering
Sudumbro, Maval, Pune - 412 109.



Siddhant College of Engineering.

(Approved by AICTE, Recognized by Govt. of Maharashtra and Affiliated to S.P. Pune University & MSBTE)

Department of Information and Technology

SEM-I (2021-22)

Class:- BE (IT)

Date : 11th Nov 2021

Project Review II Schedule

Panel 1	Date	Time	Project Group No	Location	Expert 1	Expert 2
1	15/11/2021 Monday	10.00 AM to 12:00 NOON	1,2	C-19	Prof. R. G. Kulkarni	Prof.S.Rangdale
			5, 6			
			8			
2			7,9, 10	C-21	Prof. C. B. Sharma	Prof. A. Bhosale
5			3, 4	C-23	Prof. J. M. Pingalkar	Prof. R. G. Kulkarni

Prof. Rashmi Kulkarni
Project coordinator
(9689910756)



Dr. B. Gupta
Head of Department (IT)

Head of Info. Tech. Dept.
Siddhant College of Engineering
Sudumbare, Maval, Pune-412 109.