



Kopergaon Taluka Education Society's

K. J. Somaiya College of Arts, Commerce and Science, Kopergaon

Criterion 2 –

Teaching-learning and Evaluation

Key Indicator- 2.6 Student Performance and Learning Outcomes

2.6.2 QIM – Attainment of POs and COs are evaluated

2.6.2 A

**Design Attainment worksheet
for evaluation of POs and COs**



Kopargaoon Taluka Education Society's

K.J. Somaiya College of Arts, Commerce & Science

Mohanirajnagar, Kopargaoon - 423601, Dist. Ahmednagar (MH.)

Affiliated to Savitribai Phule Pune University, Pune ID No. PU/AN/ASC/07(1964)

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AN ISO 9001-2015 CERTIFIED INSTITUTE

SAVITRIBAI PHULE PUNE UNIVERSITY "BEST COLLEGE AWARD"

Principal : Dr. B. S. Yadav (M.Sc., Ph.D.)

Founder President : Late K. B. Rohamare (Ex. M.L.A.)

Ref. No. : IQAC/C-II

Date : 20/06/2020

All the faculty members are hereby provided an overview of the mechanism for stating, mapping and attainment of COs (Course Outcomes), POs (Program Outcomes), and PSOs (Program Specific Outcomes) as laid down by the Internal Quality Assurance Cell (IQAC).

Understanding COs, POs, and PSOs:

Course Outcomes (COs): These are specific statements that describe what a student will be able to do after completing a particular course. COs are typically derived from the broader program outcomes and are aligned with the course content and objectives.

Program Outcomes (POs): These are broader statements that describe what students are expected to know and be able to do by the time they graduate from their program. POs are often aligned with the institution's mission and accreditation standards.

Program Specific Outcomes (PSOs): These are outcomes that are specific to a particular program or specialization within a program. PSOs are designed to reflect the unique characteristics or goals of that program.

COs are aligned with the POs to ensure that each course contributes to the achievement of program-level outcomes. PSOs are aligned with both COs and POs, focusing on the specific needs and objectives of a particular program or specialization. Course objectives, assignments, assessments, and teaching methods are designed to align with the COs. The curriculum as a whole is structured to ensure that all POs and PSOs are addressed through a combination of courses and learning experiences. Assessment methods are designed to measure student achievement of COs, POs, and PSOs.

All are requested to follow the given framework for the calculation of COs, POs, and PSOs. However, you are also free to incorporate your own ideas only after the consultation with IQAC.

Best wishes!

Co-ordinator,

COs-POs-PSOs Committee



Co-ordinator
IQAC, K. J. Somaiya College
Kopargaoon, Dist. A.Nagar



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Course Outcome and Program Outcome Attainment Worksheet for Courses

| | |
|-----------------------------------|--|
| Academic Year | |
| Semester | |
| Title of Course | |
| Course Code (Theory) | |
| Course Number(Theory) | |
| Course Code (lab) | |
| Course Number(Lab) | |
| Course Coordinator(Theory) | |
| Course Coordinator(Lab) | |



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B.Sc.- PO (Programme Outcome) Statements

| PO No. | Statement |
|---------------|---------------------------|
| PO1 | Knowledge – |
| PO2 | Skill Development- |
| PO3 | Problem Analysis- |
| PO4 | Modern Tool Usage- |
| PO5 | Internalization- |
| PO6 | Logical thinking- |
| PO7 | Examination- |
| PO8 | Addressing- |
| PO9 | Recognition- |
| PO10 | Application- |



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PSO's (Programme Specific Outcome) Statements

| PSO. No. | Statement |
|-----------------|------------------|
| PSO-1 | |
| PSO-2 | |
| PSO-3 | |
| PSO-4 | |
| PSO-5 | |

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Academic Year: 2020-21

Course Name:

Class:

Semester:

CO's (Course Outcome) Statements

| Course No. | CO No. | Statement | Bloom Level |
|------------|--------|-----------|-------------|
| ----- | | | |
| | CO-111 | | Remember |
| | CO-112 | | Understand |
| | CO-113 | | Apply |
| | CO-114 | | Analyze |
| | CO-115 | | understand |
| | CO-116 | | Create |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

| Course No. | Course Code | Course Name | Direct Assessment Tools | | | Indirect Assessment Tool | |
|------------|-------------|-------------------------|-------------------------|-----------|----------------|--------------------------|--------------------|
| | | | External | Internal | | | |
| ----- | ----- | Algebra | ESE | CA1-CT | CA2-Assignment | CA3-Oral/Seminar | Course Exit Survey |
| | | Direct Attainment Ratio | 35 | 15 | | | |
| | | Final Attainment Ratio | 70% | | | 30% | |

| | |
|--|-----------------|
| CA1- 20 Objectives | 20 Marks |
| CA2 - 3 Assignments, 5 Marks each | 15 Marks |
| CA3- Oral | 10 Marks |
| ESE - (Covering all Cos) | 35 Marks |
| Course Exit Survey - 5 feedback questions | |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

CO's (Course Outcome) Statements

| Course No. | CO No. | Statement | Target (Class Average) | |
|------------|--------|-----------|------------------------|---|
| ----- | CO-111 | | ---% | All the CO are considered equally important, hence assigned same target for each CO. As this is basic core subject, hence the target assigned is ---% |
| | CO-112 | | ---% | |
| | CO-113 | | ---% | |
| | CO-114 | | ---% | |
| | CO-115 | | ---% | |
| | CO-116 | | ---% | |

Note:

- 1) Targets can be set on the basis of average or the set point that can be decided by faculty member of concern subject for e.g. 60 % i.e. first class.
- 2) Individual targets for each CO can be set.



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Academic Year: 2020-21

Course Name:

Class:

Semester:

Class Test-CA1 Question Paper

Date:

Time:

Maximum

Marks:15

Instructions:

1) Figures to the right indicate full mark.

2) Assume suitable data wherever necessary with justification.

Q1. Choose the correct alternative
= 5)

(1 X 5

Course Outcome

| | | | |
|---|---|--------------------------|------------|
| 1 | The source transfer maximum power to the load if _____ | | CO1 |
| | a) $R_i = R_L$ | c) $R_i < R_L$ | |
| | b) $R_i > R_L$ | d) $R_i \neq R_L$ | |
| 2 | Current passing through conductor is directly proportional to _____ | | CO2 |
| | a) voltage | c) length | |
| | b) resistance | d) density | |
| 3 | The base of transistor is.....doped | | CO3 |
| | a) heavily | c) moderately | |
| | b) lightly | d) very heavily | |
| 4 | A unijunction transistor consists of _____ base | | CO4 |
| | a) 1 | c) 3 | |
| | b) 2 | d) 0 | |
| 5 | Oscillator works on the principle of.....feedback | | CO5 |
| | a) negative | c) neutral | |
| | b) positive | d) none of the mentioned | |

Q2. Attempt any one of the followings

(1 X 5 = 5)

Course Outcome

| | | |
|---|---|------------|
| a | State and prove Thevenin's theorem. | CO1 |
| b | Explain series voltage divider circuit. | CO1 |

Q3. Answer the following question in detail.

(1 X 5 = 5)

Course Outcome

| | | |
|---|--|------------|
| a | Explain the concept of virtual ground in op-amp. | CO5 |
|---|--|------------|



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Academic Year: 2020-21

Course Name:

Class:

Semester:

Class Test-CA1 Assessment

| Sr. No. | Name | Q.1 | | | | | Q.2 | Q.3 | Total | CO-1 | CO-2 | CO-3 | CO-4 | CO-5 | CO-TOTAL |
|---------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|----------|
| | | 1 | 2 | 3 | 4 | 5 | CO-1 | CO-5 | | | | | | | |
| | | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 15 | 6 | 1 | 1 | 1 | 6 | 15 |
| 1 | | 0 | 1 | 1 | 1 | 1 | 3 | 3 | 10 | 3 | 1 | 1 | 1 | 4 | 10 |
| 2 | | 1 | 1 | 0 | 1 | 1 | 4 | 4 | 12 | 5 | 1 | 0 | 1 | 5 | 12 |
| 3 | | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 13 | 5 | 1 | 1 | 1 | 5 | 13 |
| 4 | | 1 | 1 | 1 | 1 | 1 | 4 | 3 | 12 | 5 | 1 | 1 | 1 | 4 | 12 |
| 5 | | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 15 | 6 | 1 | 1 | 1 | 6 | 15 |
| 6 | | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 15 | 6 | 1 | 1 | 1 | 6 | 15 |
| 7 | | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 15 | 6 | 1 | 1 | 1 | 6 | 15 |
| 8 | | 1 | 1 | 1 | 1 | 1 | 4 | 5 | 14 | 5 | 1 | 1 | 1 | 6 | 14 |
| | | 0.88 | 1 | 0.8 | 1 | 1 | 4.25 | 4.25 | | 5.13 | 1.00 | 0.88 | 1.00 | 5.25 | 13.25 |
| | | CO-1 | CO-2 | CO-3 | CO-4 | CO-5 | CO-1 | CO-5 | | CO-1 | CO-2 | CO-3 | CO-4 | CO-5 | |

| | | | | | | | | | | | | | | | |
|----------------------------------|--|--|--|--|--|--|--|--|--|-------------|------|------|------|-------|----------|
| =COUNTIF(L12:L71,">=1.32") | | | | | | | | | | CO-1 | CO-2 | CO-3 | CO-4 | CO-5 | CO-TOTAL |
| CO Marks | | | | | | | | | | 6 | 1 | 1 | 1 | 6 | 15 |
| Number of Students above average | | | | | | | | | | 34 | 41 | 31 | 30 | 29 | 26 |
| = (L78/60)*100 | | | | | | | | | | Attainment: | | | | | |
| % attainment | | | | | | | | | | 5.76 | 15.3 | 13.4 | 15.3 | 7.692 | 7.69 |
| | | | | | | | | | | 9 | 8 | 6 | 8 | 3 | |

| | | | | | | |
|------------|-------|-------|-------|----|--------|----|
| Above 60% | 34 | 41 | 31 | 30 | 29 | 39 |
| Attainment | N | Y | N | N | N | |
| % | 56.67 | 68.33 | 51.67 | 50 | 48.333 | 65 |

Note: Represents the calculations based on the basis 60% attainment of average marks of class (for eg. 36 students scoring more than class avg)



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Academic Year: 2020-21

Course Name:

Class:

Semester:

CA2- Assignment

Assignment No. 1 to 5

| Ass. No. | Questions | CO |
|-----------------|--|------------|
| A1 | Q.1) State and prove maximum power transfer theorem. | CO1 |
| A2 | Q.2) State and explain Kirchoff's laws. How it is applicable in electricity. | CO2 |
| A3 | Q.3) Discuss common-emitter configuration of a transistor in detail . | CO3 |
| A4 | Q.4) Describe working of a transistor as an amplifier. | CO4 |
| A5 | Q.5) Discuss non-inverting amplifier. | CO5 |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

CA2- Assignment Assessment

Name of Faculty:

=SUM(D13:H13)

| Ro ll No | Name of Student | Assign ment (25) | Assi gn 1 (5) | Assi gn 2 (5) | Assi gn 3 (5) | Assi gn 4 (5) | Assi gn 5 (5) | Tot al | CO 1 | CO 2 | CO 3 | CO 4 | CO 5 |
|--------------------------|--------------------|------------------------|-----------------------------|---------------------|---------------------|---------------------|---------------------|-----------|-------------|---------|---------|---------|---------|
| | | | CO1 (5) | CO2 (5) | CO3 (5) | CO4 (5) | CO5 (5) | | 5 | 5 | 5 | 5 | 5 |
| 1 | | 21 | 4 | 4 | 4 | 4 | 5 | 21 | 4 | 4 | 4 | 4 | 5 |
| 2 | | 17 | 4 | 4 | 4 | 4 | 1 | 17 | 4 | 4 | 4 | 4 | 1 |
| 3 | | 18 | 2 | 4 | 4 | 4 | 4 | 18 | 2 | 4 | 4 | 4 | 4 |
| 4 | | 20 | 5 | 3 | 5 | 3 | 4 | 20 | 5 | 3 | 5 | 3 | 4 |
| 5 | | 18 | 2 | 4 | 4 | 4 | 4 | 18 | 2 | 4 | 4 | 4 | 4 |
| 6 | | 11 | 2 | 3 | 2 | 2 | 2 | 11 | 2 | 3 | 2 | 2 | 2 |
| 7 | | 20 | 4 | 5 | 3 | 5 | 3 | 20 | 4 | 5 | 3 | 5 | 3 |
| 8 | | 17 | 3 | 4 | 3 | 2 | 5 | 17 | 3 | 4 | 3 | 2 | 5 |
| 9 | | 14 | 3 | 2 | 2 | 3 | 4 | 14 | 3 | 2 | 2 | 3 | 4 |
| 10 | | 19 | 4 | 4 | 4 | 4 | 3 | 19 | 4 | 4 | 4 | 4 | 3 |
| | | | 3.30 | 3.70 | 3.50 | 3.50 | 3.50 | 17.50 | CO 1 | CO 2 | CO 3 | CO 4 | CO 5 |
| | | | | | | | | | 3.30 | 3.70 | 3.50 | 3.50 | 3.50 |
| Subject Incharge: | | | =AVERAGE(J13:J72) | | | | | | | | | | |
| | | | | | | | | | CO 1 | CO 2 | CO 3 | CO 4 | CO 5 |
| | | | | | | | | | CO Marks | 5 | 5 | 5 | 5 |
| | | | =COUNTIF(J13:J72,">=4.30") | | | | | | | | | | |
| | | | Number above Average | | | | | | 4 | 3 | 7 | 8 | 8 |
| | | | | | | | | | N | N | Y | Y | Y |
| | | | % Attainment | | | | | | 51.67 | 75 | 56.67 | 51.67 | 51.67 |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

CA3 - Mode of Assessment: Seminars/ Oral

| Roll No. | Name of Student | CA3 (10) (CO4-CO6) | CO4 (2) | CO5(4) | CO6 (4) |
|--------------------------|-----------------------|-----------------------|----------------|---------------|----------------|
| 1 | Autade Rohit R. | 7 | 2 | 2 | 3 |
| 2 | Bhujade Arti V. | 9 | 2 | 3 | 4 |
| 3 | Choudhari Abhishek R. | 10 | 2 | 4 | 4 |
| 4 | Gawali Nikita B. | 10 | 2 | 4 | 4 |
| 5 | Gavhane Krushna S. | 10 | 2 | 4 | 4 |
| 6 | Jadhav Suraj S. | 10 | 2 | 4 | 4 |
| 7 | Kadam Rutuja V. | 9 | 2 | 3 | 4 |
| 8 | Kadam Samrudhi S. | 9 | 2 | 4 | 3 |
| 9 | Khilare Rutuja B. | 9 | 2 | 4 | 3 |
| 10 | Hole Tejas V. | 9 | 2 | 4 | 3 |
| 11 | Anarthe Shyam G. | 8 | 2 | 3 | 3 |
| 12 | Bachkar Amol A. | 9 | 2 | 4 | 3 |
| 13 | Bankar Shradha S. | 10 | 2 | 4 | 4 |
| 14 | Bharud Komal J. | 9 | 2 | 4 | 3 |
| | | 9.26 | 2.00 | 3.64 | 3.50 |
| Subject Incharge: | | | CO4 (2) | CO5(4) | CO6 (4) |

`=AVERAGE(D11:D70)`

`=COUNTIF(D11:D70,">=1.72")`

| | | | |
|-----------------|--------------|--------------|--------------|
| Count above 60% | 10 | 11 | 12 |
| Attainment | Y | Y | Y |
| % | 71.42 | 78.57 | 85.71 |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

End Semester Examination (ESE)

| Sr. No | Name of Student | CA1 (20) | CA2 (15) | CA3 (10) | CA Total (45) | Uni. Internal (15) | ESE (35) CO1-6 | Total Marks (50) | Total Marks (100) |
|--------|--------------------|----------|----------|----------|---------------|--------------------|----------------|------------------|-------------------|
| 1 | Chaudhari Abhi | 16 | 14 | 6 | 36 | 12 | 21 | 33 | 66 |
| 2 | Anarthe Shyam | 20 | 15 | 10 | 45 | 15 | 14 | 29 | 58 |
| 3 | Autade Rohit | 13 | 10 | 7 | 30 | 10 | 10 | 20 | 40 |
| 4 | Bachkar Amol | 16 | 15 | 5 | 36 | 12 | 22 | 34 | 68 |
| 5 | Bankar Shraddha | 16 | 15 | 5 | 36 | 12 | 22 | 34 | 68 |
| 6 | Bharud Komal | 20 | 15 | 9 | 44 | 15 | 18 | 33 | 65 |
| 7 | Bhujade Arati | 14 | 11 | 8 | 33 | 11 | 8 | 19 | 38 |
| 8 | Bhujade Rohit | 20 | 15 | 10 | 45 | 15 | 20 | 35 | 70 |
| 9 | Dange Kanchan | 14 | 11 | 8 | 33 | 11 | 15 | 26 | 52 |
| 10 | Deokar Sakshi | 13 | 9 | 8 | 30 | 10 | 18 | 28 | 56 |
| 11 | Dhule Vaishnavi | 14 | 15 | 5 | 34 | 11 | 29 | 40 | 81 |
| 12 | Dike Vaishnavi | 14 | 13 | 6 | 33 | 11 | 28 | 39 | 78 |
| 13 | Dube Vrushali | 20 | 15 | 10 | 45 | 15 | 17 | 32 | 64 |
| 14 | Gadekar Shraddha | 14 | 12 | 7 | 33 | 11 | 14 | 25 | 50 |
| 15 | Gavali Nikita | 16 | 11 | 10 | 37 | 12 | 17 | 29 | 59 |
| 16 | Gawali Sanket | 20 | 15 | 10 | 45 | 15 | 22 | 37 | 74 |
| 17 | Gawli Priti | 20 | 15 | 10 | 45 | 15 | 18 | 33 | 66 |
| 18 | Hiwarade | 18 | 15 | 10 | 43 | 14 | 24 | 38 | 77 |
| 19 | Jadhav Suraj | 14 | 10 | 9 | 33 | 11 | 17 | 28 | 56 |
| 20 | Jamdhade Aishwarya | 18 | 15 | 10 | 43 | 14 | 28 | 42 | 85 |
| | | | | | | 13 | 20 | 32.86 | 65.73 |

| | | |
|----------------------------|-------|--|
| NO. of Students Above Avg. | 25 | |
| Attainment | N | |
| % Attainment | 51.02 | |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

Course Exit Survey

| Sr. No | Question | CO | Level of Agreement | | | Attainment | % Attainment |
|--------|---|-------------|--------------------|------------|-------------|------------|--------------|
| | | | Strongly (3) | Fairly (2) | Neutral (1) | | |
| 1 | Are you able to define the terms sets, relations and functions? | CO-1 | 18 | 31 | 0 | 2.4 | 79 |
| 2 | Are you able to explain well ordering principal? | CO-2 | 23 | 21 | 5 | 2.4 | 79 |
| 3 | Are you able to apply division algorithm? | CO-3 | 18 | 28 | 3 | 2.3 | 77 |
| 4 | Are you able to calculate sum and product of complex numbers? | CO-4 | 19 | 28 | 2 | 2.3 | 78 |
| 5 | Are you able to find the nth roots of unity? | CO-5 | 19 | 30 | 0 | 2.4 | 80 |
| 6 | Are you able to apply division algorithm? | CO-5 | 18 | 28 | 3 | 2.3 | 77 |

Note: We should add Following survey to strengthen claim of attainment of Program outcomes

| | | | |
|---|-----------------|------------------------|---|
| 1 | Exit survey | 100 % students | Feedback survey should be based on POs |
| 2 | Alumni survey | 10-20 % Alumni | |
| 3 | Employer survey | 5-10 % Employer | |



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Course Name:

Class:

Semester:

Computation of CO Attainment

Assessment Plan for Internal Assessment

| Course No. | Course Outcome No. | CA1 | CA2 | CA3 | |
|------------|--------------------|-----|-----|-----|--|
| | Marks | 20 | 15 | 10 | |
| 0 | CO-1 | 50 | | 50 | |
| | CO-2 | 50 | 50 | | |
| | CO-3 | 50 | 50 | | |
| | CO-4 | 50 | | 50 | |
| | CO-5 | | 50 | | |
| | CO-5 | 50 | 50 | 50 | |

Class Average in Internal Assessment

| Course No. | Course Outcome No. | CA1 | CA2 | CA3 | Internal Assessment class average % |
|------------|--------------------|-------|-------|-------|-------------------------------------|
| | | 20 | 15 | 10 | 100 |
| 0 | CO-1 | 46.94 | | 71.43 | 59.18 |
| | CO-2 | 67.35 | 69.39 | | 68.37 |
| | CO-3 | 53.06 | 81.63 | | 67.35 |
| | CO-4 | 63.27 | | 57.14 | 60.20 |
| | CO-5 | | | | |
| | CO-5 | 69.39 | 85.71 | 51.02 | 68.71 |

Attainment of CO using Direct Method

| Course No. | Course Outcome No. | Internal Assessment(IA) class average % | External Assessment (ESE) | Direct CO Attainment (30% of IA + 70% ESE) |
|------------|--------------------|---|---------------------------|--|
| 0 | CO-1 | 65 | 51 | 55 |
| | CO-2 | 59 | 51 | 53 |
| | CO-3 | 68 | 51 | 56 |
| | CO-4 | 67 | 51 | 56 |
| | CO-5 | 60 | 51 | 54 |
| | CO-5 | 69 | 51 | 56 |
| | | | Avg | 55 |

Computation of Total CO Attainment

| Course No. | Course Outcome No. | Direct CO Attainment (30% of IA + 70% ESE) | Indirect CO Attainment(obtained from Exit Survey) % age | Total Co Attainment (70% of Direct Attainment + 30 % of exit survey) |
|------------|--------------------|--|---|--|
| 0 | CO-1 | 53 | 79 | 61 |
| | CO-2 | 56 | 79 | 63 |
| | CO-3 | 56 | 77 | 62 |
| | CO-4 | 54 | 78 | 61 |
| | CO-5 | 56 | 80 | 63 |
| | CO-6 | 54 | 78 | 61 |
| | | Avg | 55 | 78.50 |



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Academic Year: 2020-21

Course Name:

Class:

Semester:

CO Attainment Gap

| Course No. | Course Outcome No. | Total CO Attainment %age | CO Target % age | CO Attainment Gap(Attainment - Target) |
|------------|--------------------|--------------------------|-----------------|--|
| 0 | CO-1 | 61 | 60 | 1 |
| | CO-2 | 63 | 60 | 3 |
| | CO-3 | 62 | 60 | 2 |
| | CO-4 | 61 | 60 | 1 |
| | CO-5 | 63 | 60 | 3 |
| | CO-6 | 64 | 10 | 4 |

Closure of Quality loop

| Course No. | Course Outcome No. | Target % | Target achieved | Action proposed to bridge the gap | CO Attainment Gap(Attainment - Target) |
|------------|--------------------|----------|-----------------|-----------------------------------|--|
| 0 | CO-1 | 60 | 61 | | 1 |
| | CO-2 | 60 | 63 | | 3 |
| | CO-3 | 60 | 62 | | 2 |
| | CO-4 | 60 | 61 | | 1 |
| | CO-5 | 60 | 63 | | 3 |
| | CO-6 | 60 | 64 | | 64 |



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Class:

Semester:

CO-PO CORELATION LEVEL PREDECIDED

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PSO.1 | PSO.2 | PSO.3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-------|-------|
| CO1 | ✓ | ✓ | ✓ | | ✓ | | | | | | ✓ | | |
| CO2 | | ✓ | ✓ | | | | | | ✓ | | | ✓ | ✓ |
| CO3 | ✓ | | | | | ✓ | ✓ | | | | ✓ | | ✓ |
| CO4 | ✓ | | | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | |
| CO5 | ✓ | | ✓ | | | | | | | | ✓ | ✓ | |
| CO6 | | | ✓ | | | ✓ | | | | | | | ✓ |

CO-PO MATRIX

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | H | M | H | | L | | | | | | H | | |
| CO2 | | H | H | | | M | | | M | | | M | H |
| CO3 | H | | | | | H | L | | | | H | | H |
| CO4 | M | | | L | | | | H | | L | H | H | |
| CO5 | H | | H | | | | | | | M | M | H | |
| CO6 | | | H | | | L | | | | | | | H |

CO-PO MATRIX

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PSO1 | PSO2 | PSO3 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 3 | 2 | 3 | | 1 | | | | | | 3 | | |
| CO2 | | 3 | 3 | | | 2 | | | 2 | | | 2 | 3 |
| CO3 | 3 | | | | | 3 | 1 | | | | 3 | | 3 |
| CO4 | 2 | | | 1 | | | | 3 | | 1 | 3 | 3 | |
| CO5 | 3 | | 3 | | | | | | | 2 | 2 | 3 | |
| CO6 | | | 3 | | | 1 | | | | | | | 3 |
| Course Code-- | 2.8 | 2.5 | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 1.5 | 2.75 | 2.67 | 3 |

| | |
|-----------------|--|
| CO1-PO1 | It helps students to remember different laws of electricity. |
| CO1-PO2 | The topic helps know about theorems of electricity. |
| CO1-PO3 | It gives knowledge to use various instruments. |
| CO1-PO5 | Students learn measurement and taking reading. |
| CO2-PO2 | Students able to write relation of electricity. |
| CO2-PO3 | It helps students to apply various laws to electricity. |
| CO2-PO9 | The topic improves basic knowledge electric components. |
| CO2-PO7 | It helps student to overcome fault in electricity. |
| CO3-PO1 | The topics provide information of semiconductor materials. |
| CO3-PO6 | It helps to understand parameters of transistor. |
| CO3-PO7 | The topic helps to understand working of transistor. |
| CO4-PO1 | The students are able to plot characteristic curve of different configuration. |
| CO4-PO4 | It helps how to use transistor in various creating of ICs. |
| CO4-PO8 | Students able to solve numerical problems. |
| CO4-PO10 | Students learn the application of transistor in electricity. |
| CO5-PO1 | It helps to understand the function of amplifier. |
| CO5-PO2 | The can easily apply op-amp in arithmetic operations. |
| CO6-PO3 | Student gets knowledge of logic gates and its use in Ics. |
| CO6-PO6 | It helps student to solve problems on Boolean algebra. |



**Kopergaon Taluka Education Society's
Somaiya College of Arts, Commerce & Science, Kopergaon.**

Faculty:-----

Department of -----

Academic Year: 2020-21

Course Name:

Class:

Semester:

| CO-PO & PSO MATRIX | | | | | | | | | | | | | |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PSO1 | PSO2 | PSO3 |
| CO1 | 3 | 2 | 3 | | 1 | | | | | | 3 | | |
| CO2 | | 3 | 3 | | | 2 | | | 2 | | | 2 | 3 |
| CO3 | 3 | | | | | 3 | 1 | | | | 3 | | 3 |
| CO4 | 2 | | | 1 | | | | 3 | | 1 | 3 | 3 | |
| CO5 | 3 | | 3 | | | | | | | 2 | 2 | 3 | |
| CO6 | | | 3 | | | 1 | | | | | | | 3 |
| Course Code: -- | 2.75 | 2.50 | 3.00 | 1.00 | 1.00 | 2.00 | 1.00 | 3.00 | 2.00 | 1.50 | 2.75 | 2.67 | 3.00 |

| Course No. | Course Outcome No. | Total CO Attainment %age | CO attainment |
|----------------|--------------------|--------------------------|---------------|
| Course Code: - | CO1 | 78 | 18 |
| | CO2 | 78 | 18 |
| | CO3 | 83 | 23 |
| | CO4 | 79 | 19 |
| | CO5 | 77 | 17 |
| | CO6 | 75 | 15 |
| | | 78.23 | |

Attainment of PO/PSO=(Average of Attainments of Relevant COs)*Scale Factor

Scale Factor=(Actual Mapping Strength/Maximum Possible Mapping Strength)=Actual Mapping strength/3

| PO & PSO Attainment | | | | | | | | | | | | | |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Course Code: - | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PSO1 | PSO2 | PSO3 |
| | 2.75 | 2.50 | 3.00 | 1.00 | 1.00 | 2.00 | 1.00 | 3.00 | 2.00 | 1.50 | 2.75 | 2.67 | 3.00 |
| | 71.71 | 65.19 | 78.23 | 26.08 | 26.08 | 52.16 | 26.08 | 78.23 | 52.16 | 39.12 | 71.71 | 69.54 | 78.23 |