



**SELF ASSESSMENT REPORT (SAR) FORMAT**  
**UNDERGRADUATE ENGINEERING PROGRAMS (TIER-II)**  
**2<sup>nd</sup> CYCLE ACCREDITATION**  
*(Applicable for all those programs which have been granted full accreditation of 6 years under Tier II)*

NBCC Place, 4th Floor East Tower, Bhisham Pitamah Marg,  
Pragati Vihar New Delhi 110003  
P: +91(11)24360620-22, 24360654  
Fax: +91(11) 24360682  
E-mail: [membersecretary@nbaind.org](mailto:membersecretary@nbaind.org)  
Website: [www.nbaind.org](http://www.nbaind.org)  
(January, 2022)

## **SAR Contents**

<b>Serial Code &amp; Link to the Item</b>	<b>Item</b>	<b>Page No.</b>
<b>PART A</b>	<b>Institutional Information</b>	3-5
<b>PART B</b>	<b>Criteria Summary</b>	6
	<b>Program Level Criteria</b>	
1	Course Outcomes and Program Outcomes	7-11
2	Program Curriculum and Teaching – Learning Processes	12-13
3	Students’ Performance	14-19
4	Faculty Information and Contributions	20-26
5	Resources	27-29
6	Continuous Improvement	30-33
<b>PART B</b>	<b>Declaration by the Institution</b>	34
<b>Annexure I</b>	<b>Program Outcomes (POs) &amp; Program Specific Outcomes (PSOs)</b>	35

**PART A: Institutional Information**

**1. Name and Address of the Institution:**

**2. Name and Address of the Affiliating University:**

**3. Year of establishment of the Institution:**

**4. Type of the Institution:**

- Institute of National Importance
- University
- Deemed University
- Government Aided
- Autonomous
- Affiliated
- Any other (Please specify)

**5. Ownership Status:**

- Central Government
- State Government
- Government Aided
- Self - financing
- Trust
- Society
- Section 8 Company
- Any Other (Please specify)

**Provide Details:**

**6. Other Academic Institutions of the Trust/Society/Company etc., if any:**

Name of the Institution(s)	Year of Establishment	Programs of Study	Location

**Table A.6**

**Note:** Add rows as needed.

**7. Details of all the programs being offered by the institution under consideration:**

S. No.	Program Name	Name of the Department	Year of Start	Initial Intake	Increase/ Decrease in intake, if any	Year of Increase/ Decrease	AICTE Approval	Accreditation Status*

**Table A.7**

**\* Write applicable one:**

- Granted accreditation for 5/6 years for the period (specify period)
- Not accredited (specify visit dates, year)
- Withdrawn (specify visit dates, year)
- Not eligible for accreditation
- Eligible but not applied

**Note:** Add rows as needed.

**8. Programs to be considered for Accreditation vide this application**

S. No.	Program Name
1	
N.	

**Table A.8**

**9. Total number of Engineering Students:**

Item	CAY	CAYm1	CAYm2
Total no. of boys			
Total no. of girls			
Total no. of students			

**Table A.9**

*(Instruction: The data may be categorized in tabular form separately for undergraduate, postgraduate engineering, other programs, if applicable)*

**Note:** In case the institution is running programs other than engineering programs, a separate table giving similar details is to be included.

**10. Vision of the Institution:**

**11. Mission of the Institution:**

**12. Contact Information of the Head of the Institution and NBA coordinator, if designated:**

i. Name:

Designation:

Mobile No:

Email id:

ii. NBA coordinator, if designated

Name:

Designation:

Mobile No:

Email id:

## PART B: Criteria Summary

Name of the program \_\_\_\_\_

Criteria No.	Criteria	Mark/Weightage
<b>Program Level Criteria</b>		
1.	Course Outcomes and Program Outcomes	75
2.	Program Curriculum and Teaching –Learning Processes	75
3.	Students’ Performance	75
4.	Faculty Information and Contributions	125
5.	Resources	75
6.	Continuous Improvement	75
	<b>Total</b>	<b>500</b>

**PART B: Program Level Criteria**

<b>CRITERION 1</b>	<b>Course Outcomes and Program Outcomes</b>	<b>75</b>
--------------------	---	-----------

**1.1. State the Vision, Mission of the Department and Institute and Program Educational Objectives (5)**

*(Vision statement typically indicates aspirations and Mission statement states the broad approach to achieve aspirations)*

*(Here Institute Vision and Mission statements have been asked to ensure consistency with the department Vision and Mission statements)*

*(State the PEOs (3 to 5) of program seeking accreditation)*

**1.2. Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (5)**

*(Describe where (websites, curricula, posters etc.) the Vision, Mission and PEOs are published and detail the process which ensures awareness among internal and external stakeholders with effective process implementation)*

*(Internal stakeholders may include Management, Governing Board Members, faculty, support staff, students etc. and external stakeholders may include employers, industry, alumni, funding agencies, etc.)*

**1.3. Establish consistency of PEOs with Mission of the Department (5)**

***(Generate a "Mission of the Department – PEOs matrix" with justification and rationale of the mapping)***

<b>PEO Statements</b>	<b>M1</b>	<b>M2</b>	<b>....</b>	<b>Mn</b>
PEO1:				
PEO2:				
PEON:				

**Table B.1.3**

**Note:** M1, M2. . . Mn are distinct elements of Mission statement. Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low)    2: Moderate (Medium)    3: Substantial (High) *If there is no correlation, put "-"*

*Note: Wherever the word "process" is used in this document its meaning is process formulation, notification to all the concerned, and implementation.*

**1.4. Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (15)**

(Program Outcomes as mentioned in Annexure I and Program Specific Outcomes as defined by the Program)

**1.4.1. Course Outcomes (COs) (SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses and made available as evidence, if asked) (05)**

**Note:** Number of Outcomes for a Course is expected to be around 6.

**Course Name: Ciii Year of Study: YYYY – YY; for ex. C202 Year of study 2013-14**

<b>C202.1</b>	<Statement>
<b>C202.2</b>	<Statement>
<b>C202.3</b>	<Statement>
...	<Statement>
<b>C202.N</b>	<Statement>

**Table B.1.4.1**

C202 is the second course in second year and '.1' to '.6' are the outcomes of this course.

**1.4.2. CO-PO matrices of courses selected in 1.4.1 (six matrices to be mentioned; one per semester from 3<sup>rd</sup> to 8<sup>th</sup> semester) (05)**

<b>CO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>
C202.1												
C202.2												
C202.3												
...												
C202.N												
C202												

**Table B.1.4.2**

**Note:**

1. Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low)                      2: Moderate (Medium)                      3: Substantial (High)

*It there is no correlation, put "-"*

**2. Similar table is to be prepared for PSOs**



**1.4.3. Program level Course-PO matrix of all courses INCLUDING first year courses (5)**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C202												
C303												
....												
....												
C4...												

**Table B.1.4.3**

**Note:**

1. Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low)            2: Moderate (Medium)            3: Substantial (High)

*It there is no correlation, put "-"*

\* It may be noted that contents of Table 3.1.2 must be consistent with information available in Table 3.1.3 for all the courses.

**2. Similar table is to be prepared for PSOs**

**1.5. Attainment of Course Outcomes (20)**

**1.5.1. Describe the assessment tools and processes used to gather the data upon which the evaluation of Course Outcome is based (5)**

Describe different assessment tools (semester end examinations, mid-semester tests, laboratory examinations, student portfolios etc.) to measure the student learning and hence attainment of course outcomes. *(Student portfolio is a collection of artifacts that demonstrate skills, personal characteristics and accomplishments created by the student during study period.)*

The process adopted to map the assessment questions, parameters of assessment rubrics etc. to the course outcomes to be explained with examples. The process of data collection from different assessment tools and the analysis of collected data to arrive at CO attainment levels need to be explained with examples

**1.5.2. Record the attainment of Course Outcomes of courses with respect to set attainment levels (15)**

*Program shall set course outcomes target for each course using a cohort group and the expected level of performance by each student, say, 60% of students should score 60% of marks allotted*

for the measurement of a particular course outcome. There could be different levels of targets such as 70% students should score more than 70% marks, 60% students should score more than 80% marks. The above is only for example purpose. Different courses can have different targets as deemed fit with proper justification. Program should avoid very low targets and should be set based on last three-year performance.

For the set targets, program should compute attainment of course outcomes for each course using different assessment they have used during the semester, record the attainment with respect to the set targets and analyze the attainments for improvements. Details of such computations for two to three courses is to be provided. However, Program should keep attainment of course outcomes for all courses as evidence for evaluation during the visit.

**1.6. Attainment of Program Outcomes and Program Specific Outcomes (20)**

**1.6.1. Describe assessment tools and processes used for measuring the attainment of each Program Outcome and Program Specific Outcomes (5)**

(Describe the assessment tools and processes used to gather the data upon which the evaluation of each of the Program Outcomes and Program Specific Outcomes is based indicating the frequency with which these processes are carried out. Describe the assessment processes that demonstrate the degree to which the Program Outcomes and Program Specific Outcomes are attained and document the attainment levels)

**1.6.2. Provide results of evaluation of each PO & PSO (15)**

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course-PO&PSO matrices as indicated).

**PO Attainment**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												
...												
...												
C409												
Direct Attainment												

**Table B.1.6.2a**

Survey	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Survey 1												
Survey 2												
Survey 3												

.....												
<b>Indirect Attainment</b>												

**Table B.1.6.2b**

**Note:** Add more columns as needed for PSOs.

Mention the type of survey conducted and the location of its source

C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.

- Direct attainment level of a PO/PSO is determined by taking average across all courses addressing that PO/PSO.
- Indirect attainment level of a PO/PSO is determined based on the student exit surveys, employer surveys, co-curricular activities, extracurricular activities etc.

**1.7. Evidence of solving complex engineering Problems (5)**

*(PO 1-5 involves solving complex engineering problems. Through the activities of mini projects/major projects/ term projects/ independent study/ problem-based learning approach adopted or any other activities conducted specifically which reflect the solving of complex engineering problems are to be presented briefly and evidenced during the visit)*

<b>CRITERION 2</b>	<b>Program Curriculum and Teaching –Learning Processes</b>	<b>75</b>
--------------------	--	-----------

## **2.1. Program Curriculum (15)**

### **2.1.1. State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I. Also mention the identified curricular gaps, if any (5)**

*(State the process details; also mention identified curricular gaps). Note: In case all POs are being demonstrably met through University Curriculum then 2.1.2 will not be applicable and the weightage of 2.1.1 will be 15.)*

### **2.1.2. State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I (10)**

*(State the process details)*

## **2.2. Teaching-Learning Processes (60)**

### **2.2.1. Describe Processes followed to improve quality of Teaching & Learning (15)**

*(Processes may include conduction of Online classes, adaptation to New Education Policy, implementation of Swayam, adherence to academic calendar and improving instruction methods using pedagogical initiatives such as real-world examples, collaborative learning, quality of laboratory experience with regard to conducting experiments, recording observations, analysis of data etc. show casing the events which lead to solving complex engineering problems need to be documented)*

### **2.2.2. Quality of end semester examination, internal semester question papers, assignments and evaluation (15)**

*(Mention the initiatives, implementation details and analysis regarding constructive alignment of assessments towards attainment of Course outcomes and solving complex engineering problems)*

### **2.2.3. Quality of student projects (15)**

*(Provide information regarding types of projects (minor projects, independent projects, Integrated design project, Research projects etc.,) carried out by students explaining the process used for project identification, allotment, continuous monitoring, evaluation tools and techniques including Rubrics. Mention Implementation details including details of POs and PSOs addressed through the projects considering factors including, but not limited to, environment, safety, ethics, cost, type (application, product, research, review etc.) and standards.*

### **2.2.4. Initiatives related to industry interaction, industry internship/summer training (10)**

*(Give details of the industry involvement in the program such as industry-attached laboratories, partial delivery of appropriate courses by industry experts, industry internship/summer training etc. Mention the initiatives, implementation details and impact analysis)*

### **2.2.5. Initiatives towards the New Education Policy (5)**

*(Brief explanation of the plans to implement the new education policy)*

<b>CRITERION 3</b>	<b>Students' Performance</b>	<b>75</b>
--------------------	------------------------------	-----------

<b>Item</b> <b>(Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)</b>	<b>CAY</b>	<b>CAYm1</b>	<b>CAYm2</b>
Sanctioned intake of the program ( <i>N</i> )			
Total number of students admitted in first year <i>minus</i> number of students migrated to other programs/institutions, plus no. of students migrated to this program ( <i>N1</i> )			
Number of students admitted in 2nd year in the same batch via lateral entry ( <i>N2</i> )			
Separate division students, if applicable ( <i>N3</i> )			
Total number of students admitted in the Program ( <i>N1 + N2 + N3</i> )			

**Table B.3a**

**CAY – Current Academic Year**

**CAYm1- Current Academic Year minus1= Current Assessment Year**

**CAYm2 - Current Academic Year minus2=Current Assessment Year minus 1**

**LYG – Last Year Graduate**

**LYGm1 – Last Year Graduate minus 1**

**LYGm2 – Last Year Graduate minus 2**

<b>Year of entry</b>	<b><i>N1 + N2 + N3</i></b> <b>(As defined above)</b>	<b>Number of students who have successfully graduated <i>without backlogs</i> in any semester/year of study</b> <b>(Without Backlog means no compartment or failures in any semester/year of study)</b>			
		<b>I Year</b>	<b>II Year</b>	<b>III Year</b>	<b>IV Year</b>
CAY					
CAYm1					
CAYm2					
CAYm3					
CAYm4 (LYG)					
CAYm5 (LYGm1)					
CAYm6 (LYGm2)					

**Table B.3b**

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated in stipulated period of study) [Total of with Backlog + without Backlog]			
		I Year	II Year	III Year	IV Year
CAY					
CAYm1					
CAYm2					
CAYm3					
CAYm4 (LYG)					
CAYm5 (LYGm1)					
CAYm6 (LYGm2)					

**Table B.3c**

For Example: from data entry perspective:

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY (2020-21)	CAYm1 (2019-20)	CAYm2 (2018-19)
Sanctioned intake of the program (N)	120	120	120
Total number of students admitted in first year <i>minus</i> number of students migrated to other programs/institutions plus no. of students migrated to this program (N1)	100	100	110
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	Nil	24	24
Separate division (N3)	Nil	Nil	Nil
Total number of students admitted in the Program (N1 + N2 + N3)	100	124	134

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated without any backlogs in any semester/year of study			
		I Year	II Year	III Year	IV Year
CAY (2020-21)	100(100+0+0)				
CAYm1 (2019-20)	124(100+24+0)	40			
CAYm2 (2018-19)	124 (100+24+0)	50	45+4		

CAYm3 (2017-18)	134 (110+24+0)	20	20+4	15+3	
CAYm4 (LYG) (2016-17)	124 (100+24+0)	21	21+4	15+4	15+4
CAYm5 (LYGm1) (2015-16)	130 (120+10+0)	30	30+10	25+4	20+4
CAYm6 (LYGm2) (2014-15)	144 (120+24+0)	30	25+5	25+5	20+5

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated in stipulated period of study [Total of with Backlog + without Backlog]			
		I Year	II Year	III Year	IV Year
CAY (2020-21)	100(100+00+0)				
CAYm1 (2019-20)	124(100+24+0)	60			
CAYm2 (2018-19)	124 (100+24+0)	50	40+20		
CAYm3 (2017-18)	134 (110+24+0)	90	80+20	70+20	
CAYm4 (LYG) (2016-17)	124 (100+24+0)	100	90+20	85+18	85+15
CAYm5 (LYGm1) (2015-16)	130 (120+10+0)	80	70+10	60+10	50+10
CAYm6 (LYGm2) (2014-15)	144 (120+24+0)	70	60+15	54+10	50+10

### 3.1. Enrolment Ratio (15)

Enrolment Ratio= N1/N

Item	Marks
(Students enrolled at the First Year Level on average basis during the previous three academic years starting from current academic year)	
>=90% students enrolled	15
>=80% students enrolled	12
>=70% students enrolled	10
>=60% students enrolled	8
>=50% students enrolled	6
Otherwise	0

**Table B.3.1**



### 3.2. Success Rate in the stipulated period of the program (15)

#### 3.2.1. Success rate without backlogs in any semester/year of study (10)

$SI = (\text{Number of students who have graduated from the program without backlog}) / (\text{Number of students admitted in the first year of that batch and actually admitted in 2nd year via lateral entry and separate division, if applicable})$

$\text{Average SI} = \text{Mean of Success Index (SI) for past three batches}$

$\text{Success rate without backlogs in any semester/year of study} = 10 \times \text{Average SI}$

Item	Last Year of Graduate, LYG	Last Year of Graduate minus 1, LYGm1	Last Year of Graduate minus 2, LYGm2
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable			
Number of students who have graduated without backlogs in the stipulated period			
Success Index (SI)			

**Table B.3.2.1**

#### 3.2.2. Success rate in stipulated period of study [Total of with backlog + without backlog] (5)

$SI = (\text{Number of students who graduated from the program in the stipulated period of course duration}) / (\text{Number of students admitted in the first year of that batch and actually admitted in 2nd year via lateral entry and separate division, if applicable})$

$\text{Average SI} = \text{mean of Success Index (SI) for past three batches}$

$\text{Success rate} = 5 \times \text{Average SI}$

Item	Last Year of Graduate, LYG (CAYm4)	Last Year of Graduate minus 1, LYGm1 (CAYm5)	Last Year of Graduate minus 2, LYGm2 (CAYm6)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable			
Number of students who have graduated in the stipulated period			
Success Index (SI)			
Average Success Index			

**Table B.3.2.2**

**Note:** If 100% students clear without any backlog then also total marks scored will be 15 as both 3.2.1 & 3.2.2 will be applicable simultaneously

### 3.3. Academic Performance in Second Year (5)

*Academic Performance = 0.5 \* Average API (Academic Performance Index), where*

**API** = ((Mean of 2<sup>nd</sup> Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Second Year/10)) x (number of successful students/number of students appeared in the examination)

*Successful students are those who are permitted to proceed to the Third year.*

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
API = X* (Y/Z)	AP1	AP2	AP3
Average API = (AP1 + AP2 + AP3)/3			

**Table B.3.3**

### 3.4. Academic Performance in Third Year (5)

*Academic Performance = 0.5 \* Average API (Academic Performance Index)*

**API** = ((Mean of 3<sup>rd</sup> Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Third Year/10)) x (number of successful students/number of students appeared in the examination)

*Successful students are those who are permitted to proceed to the final year.*

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
API = x* (Y/Z)	AP 1	AP 2	AP 3
Average API = (AP1 + AP2 + AP3)/3			

**Table B.3.4**

### 3.5. Placement, Higher Studies and Entrepreneurship (15)

Assessment Points = 15 × average placement

Item	CAYm1	CAYm2	CAYm3
Total No. of Final Year Students (N)			
No. of students placed in companies or Government Sector (x)			
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)			
No. of students turned entrepreneur in engineering/technology (z)			
$x + y + z =$			
Placement Index: $(x + y + z)/N$	P1	P2	P3
Average placement = $(P1 + P2 + P3)/3$			
Assessment Points = 15 × average placement			

**Table B.3.5**

### 3.6. Professional Activities (20)

#### 3.6.1. Professional societies/chapters and organizing engineering events (5)

(The Department shall provide relevant details)

#### 3.6.2. Publication of technical magazines, newsletters, etc. (5)

(The Department shall list the publications mentioned earlier along with the names of the editors, publishers, etc.)

#### 3.6.3. Participation in inter-institute events by students of the program of study (5)

(The Department shall provide a table indicating those publications, which received awards in the events/conferences organized by other institutes)

#### 3.6.4. Participation in national/international competitive events by students of the program of study (5)

(The Department shall provide relevant details)

<b>CRITERION 4</b>	<b>Faculty Information and Contributions</b>	<b>125</b>
--------------------	--	------------

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is (" No" )	Nature of Association (Regular/Contract)
	Degree (highest degree)	University	Year of attaining higher qualification							Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		

**Table B.4**

**Note:** Please provide details for the faculty of the department, cumulative information for all the shifts for all academic years starting from current year.

#### 4.1. Student-Faculty Ratio (SFR) (20)

*(To be calculated at Department Level)*

No. of UG Programs in the **Department** (n): \_\_\_\_\_

No. of PG Programs in the Department (m): \_\_\_\_\_

No. of Students in UG 2<sup>nd</sup> Year= **u1**

No. of Students in UG 3<sup>rd</sup> Year= **u2**

No. of Students in UG 4<sup>th</sup> Year= **u3**

No. of Students in PG 1<sup>st</sup> Year= **p1**

No. of Students in PG 2<sup>nd</sup> Year= **p2**

**No. of Students = Sanctioned Intake + Actual admitted lateral entry students**

*(The above data to be provided considering all the UG and PG programs of the department)*

**S**=Number of Students in the Department = UG1+UG2+UG3+PG1+PG2

**F** = Total Number of Faculty Members in the Department (excluding first year faculty)

**Student Faculty Ratio (SFR) = S / F**

Year	CAY	CAYm1	CAYm2
u1.1			
u1.2			
u1.3			
UG1	<b>u1.1+u1.2+u1.3</b>	<b>u1.1+u1.2+u1.3</b>	<b>u1.1+u1.2+u1.3</b>
...			
u <sub>n</sub> .1			
u <sub>n</sub> .2			
u <sub>n</sub> .3			
UG <sub>n</sub>	<b>u<sub>n</sub>.1+u<sub>n</sub>.2+u<sub>n</sub>.3</b>	<b>u<sub>n</sub>.1+u<sub>n</sub>.2+u<sub>n</sub>.3</b>	<b>u<sub>n</sub>.1+u<sub>n</sub>.2+u<sub>n</sub>.3</b>
p1.1			
p1.2			
PG1	<b>p1.1+p1.2</b>	<b>p1.1+p1.2</b>	<b>p1.1+p1.2</b>
....			
pm.1	<b>pm.1+pm.2</b>		
pm.2			
PG <sub>m</sub>		<b>pm.1+pm.2</b>	<b>pm.1+pm.2</b>
Total No. of Students in the Department ( <b>S</b> )	<b>UG1 + UG2 + ... + UG<sub>n</sub> + PG1 + ... PG<sub>m</sub>=S1</b>	<b>UG1 + UG2 + ... + UG<sub>n</sub> + PG1+... + PG<sub>m</sub>=S2</b>	<b>UG1 + UG2 + ... + UG<sub>n</sub> + PG1+... + PG<sub>m</sub>=S3</b>
No. of Faculty in the Department ( <b>F</b> )	<b>F1</b>	<b>F2</b>	<b>F3</b>
Student Faculty Ration (SFR)	<b>SFR1=S1/F1</b>	<b>SFR2= S2/F2</b>	<b>SFR3= S3/F3</b>
Average SFR	<b>SFR=(SFR1+SFR2+SFR3)/3</b>		

**Table B.4.1**

Marks to be given proportionally from a maximum of 20 to a minimum of 04 for average SFR between 20:1 to 25:1, and zero for average SFR higher than 25:1. Marks distribution is given as below:

< = 20	-	20 Marks
< = 21	-	16 Marks
< = 22	-	12 Marks
< = 23	-	08 Marks
< = 25	-	04 Marks
> 25.0	-	0 Marks

**Note:**

All the faculty whether regular or contractual (except Part-Time), will be considered. The contractual faculty (doing away with the terminology of visiting/adjunct faculty, whatsoever) who have taught for 2 consecutive semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:

1. Shall have the AICTE prescribed qualifications and experience.
2. Shall be appointed on full time basis and worked for consecutive two semesters during the particular academic year under consideration.
3. Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit

**4.1.1. Provide the information about the regular and contractual faculty as per the format mentioned below:**

	<b>Total number of regular faculty in the department</b>	<b>Total number of contractual faculty in the department</b>
<b>CAY</b>		
<b>CAYm1</b>		
<b>CAYm2</b>		

**Table B4.1.1**

**4.2. Faculty Cadre Proportion (15)**

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = 1/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 4.1

F2: Number of Associate Professors required = 2/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 4.1

F3: Number of Assistant Professors required = 6/9 x Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 4.1

<b>Year</b>	<b>Professors</b>		<b>Associate Professors</b>		<b>Assistant Professors</b>	
	Required F1	Available	Required F2	Available	Required F3	Available
<b>CAY</b>						
<b>CAYm1</b>						
<b>CAYm2</b>						
<b>Average Numbers</b>	RF1=	AF1=	RF2=	AF2=	RF3=	AF3=

**Table B.4.2**

$$\text{Cadre Ratio Marks} = \left[ \frac{\text{AF1}}{\text{RF1}} + \frac{\text{AF2} \times 0.6}{\text{RF2}} + \frac{\text{AF3} \times 0.4}{\text{RF3}} \right] \times 7.5 \text{ Check}$$

- If AF1 = AF2= 0 then zero marks
- Maximum marks to be limited if it exceeds 10

Example: Intake = 60 (i.e. total no. of students= 180); Required number of Faculty: 9; RF1= 1, RF2=2 and RF3=6

**Case 1:** AF1/RF1= 1; AF2/RF2 = 1; AF3/RF3 = 1; Cadre proportion marks = (1+0.6+0.4) = 10

**Case 2:** AF1/RF1= 1; AF2/RF2 = 3/2; AF3/RF3 = 5/6; Cadre proportion marks = (1+0.9+0.3) = limited to 15

**Case 3:** AF1/RF1=0; AF2/RF2=1/2; AF3/RF3=8/6; Cadre proportion marks = (0+0.3+0.53) = 2.8

### 4.3. Faculty Qualification (15)

$FQ = 1.5 * \{(10X + 4Y)/F\}$  where x is No. of available faculty with Ph.D., Y is No. available faculty with M. Tech., F is No. available faculty required to comply 20:1 Faculty Student ratio (no. of faculty and no. of students required are to be calculated as per 4.1)

	<b>X</b>	<b>Y</b>	<b>F</b>	<b><math>FQ = 1.5 * \{(10X + 4Y)/F\}</math></b>
CAY				
CAYm1				
CAYm2				
Average Assessment				

**Table B.4.3**

### 4.4. Faculty Retention (10)

**No. of regular faculty members in CAYm1=**

**CAY=**

<b>Item</b> (% of faculty retained during the period of assessment keeping CAYm2 as base year)	<b>Marks</b>
$\geq 90\%$ of required Faculty members retained during the period of assessment keeping CAYm2 as base year	10
$\geq 75\%$ of required Faculty members retained during the period of assessment keeping CAYm2 as base year	8
$\geq 60\%$ of required Faculty members retained during the period of assessment keeping CAYm2 as base year	6
$\geq 50\%$ of required Faculty members retained during the period of assessment keeping CAYm2 as base year	4
$< 50\%$ of required Faculty members retained during the period of assessment keeping CAYm2 as base year	0

**Table B.4.4**

### 4.5. Faculty competencies in correlation to curriculum (5)

*(List the components of curriculum and the competencies (specialization, research publications, course developments etc.,) of faculty to correlate the curriculum and competencies.)*

**4.6. Innovations by the Faculty in Teaching and Learning (5)**

*Innovations by the Faculty in teaching and learning shall be summarized as per the following description.*

*Contributions to teaching and learning are activities that contribute to the improvement of student learning. These activities may include innovations not limited to, use of ICT, instruction delivery, instructional methods, assessment, evaluation and inclusive class rooms that lead to effective, efficient and engaging instruction. Any contributions to teaching and learning should satisfy the following criteria:*

- *The work must be made available on Institute website*
- *The work must be available for peer review and critique*
- *The work must be reproducible and developed further by other scholars*

*The department/institution may set up appropriate processes for making the contributions available to the public, getting them reviewed and for rewarding. These may typically include statement of clear goals, adequate preparation, use of appropriate methods, significance of results, effective presentation and reflective critique*

**4.7. Faculty as participants in Faculty development/training activities/STTPs (15)**

- A Faculty scores maximum five points for participation
- Participation in 2 to 5 days Faculty/ Faculty development program: 3 Points
- Participation >5 days Faculty/ Faculty development program: 5 points

Name of the Faculty	Faculty Participation as (Resource Person/Participant)	Max. 5 per Faculty		
		CAYm1	CAYm2	CAYm3
<b>Sum</b>				
<b>RF= Number of Faculty required to comply with 20:1 Student-Faculty ratio as per 4.1</b>				
<b>Assessment = 2 * (Sum/0.5 RF) (Marks limited to 15)</b>				
	<b>Average assessment over last three years (Marks limited to 15) =</b>			

**Table B.4.7**



#### **4.8. Research and Development (30)**

##### **4.8.1. Academic Research (10)**

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

- Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc. (7)
- Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute (3)

All relevant details shall be mentioned.

##### **4.8.2. Sponsored Research (10)**

- Funded research from outside:

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during CAYm1, CAYm2 and CAYm3):

Amount > 50 Lakh –10 Marks,

Amount > 40 and  $\leq$  50 Lakh – 7 Marks,

Amount > 30 and  $\leq$  40 Lakh – 5 Marks,

Amount  $\geq$  15 and  $\leq$  30 Lakh – 3 Marks,

Amount < 15 Lakh – 0 Marks

##### **4.8.3. Development activities (5)**

- Provide details:
  - Product Development
  - Research laboratories
  - Working models/charts/monographs etc.

##### **4.8.4. Consultancy (from Industry) (5)**

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during CAYm1, CAYm2 and CAYm3):

Amount >10 Lacs – 5 Marks,

Amount  $\leq$ 10 and  $\geq$  8 Lakh – 4 Marks,

Amount < 8 and  $\geq$  6 Lakh – 3 Marks,

Amount < 6 and  $\geq$  4 Lakh – 2Marks,

Amount < 4 and  $\geq$  2 Lakh – 1 Marks,

Amount < 2 Lakh – 0 Mark

#### **4.9. Faculty Performance Appraisal and Development System (FPADS) (5)**

Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, Faculty members need to innovate and conduct research for their self-renewal, keep abreast with changes in technology, and develop expertise for effective implementation of curricula. They are also expected to provide services to the industry and community for understanding and contributing to the solution of real-life problems in industry. Another role relates to the shouldering of administrative responsibilities and co-operation with other Faculty, Heads-of-

Departments and the Head of Institute. An effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance.

The assessment is based on:

- A well-defined system for faculty appraisal for all the assessment years (2)
- Its implementation and effectiveness (3)

#### **4.10. Visiting/Adjunct/Emeritus Faculty etc. (5)**

Adjunct faculty also includes Industry experts. Provide details of participation and contributions in teaching and learning by visiting/adjunct/Emeritus faculty etc. for all the assessment years:

- Provision of visiting/adjunct/Emeritus faculty (1)
- Minimum 50 hours per year interaction with a visiting/adjunct/Emeritus faculty from industry/retired professors etc. (4)  
(Minimum 50 hours interaction in a year will result in 2 marks for last two year; 2 marks x 2 years= 4 marks)

<b>CRITERION 5</b>	<b>Resources</b>	<b>75</b>
--------------------	------------------	-----------

**5.1 Adequate and well-equipped laboratories, and technical manpower (25)**

Sr. No.	Name of the Laboratory	No. of students per setup (Batch Size)	Name of the Important equipment	Weekly utilization status (all the courses for which the lab is utilized)	Technical Manpower support		
					Name of the technical staff	Designation	Qualification
1.							
N.							

**Table B.5.1**

**5.2. Laboratories maintenance and overall ambiance (5)**

(Self-Explanatory)

**5.3. Safety measures in laboratories (5)**

Sr. No.	Name of the Laboratory	Safety measures
1.		
N.		

**Table B.5.3**

**5.4. Project laboratory (15)**

(Mention facilities & Utilization)

**5.5. Feedback analysis and reward /corrective measures taken, if any for resources (5)**

(Feedback collected for resources: YES/NO; Specify the feedback collection process; Average Percentage of students who participate; Specify the feedback analysis process; Basis of reward/ corrective measures, if any; Indices used for measuring feedback; Number of corrective actions taken.)

**5.6. Program Specific Budget Allocation, Utilization (10)**

**Total Budget at program level: For CFY, CFYm1, CFYm2 & CFYm3**

**CFY: Current Financial Year – CFYm1 (Current Financial Year minus 1) CFYm2 (Current Financial Year minus 2) CFYm3 (Current Financial Year minus 3)**

**For CFY**

<b>Total Budget in CFY:</b>		<b>Actual expenditure in CFY (till ...):</b>		<b>Total No. of students in CFY:</b>
<b>Non-recurring</b>	<b>Recurring</b>	<b>Non-Recurring</b>	<b>Recurring</b>	<b>Expenditure per student</b>

**Table B.5.6a**

**Note: Similar tables are to be prepared for CFYm1, CFYm2 & CFYm3.**

Items	Budgeted in CFY	Actual expenses in CFY (till ...)	Budgeted in CFYm1	Actual Expenses in CFYm1	Budgeted in CFYm2	Actual Expenses in CFYm2	Budgeted in CFYm3	Actual Expenses in CFYm3
Laboratory equipment								
Software								
Laboratory consumable								
Maintenance and spares								
R & D								
Training and Travel								
Miscellaneous expenses *								
Total								

**Table B.5.6b**

**\* Items to be mentioned.**

**5.6.1. Adequacy of budget allocation (5)**

*(Institution needs to justify that the budget allocated over the assessment years was adequate for the program)*

**5.6.2. Utilization of allocated funds (5)**

*(Institution needs to state how the budget was utilized during the last three assessment years)*

## **5.7. Library and Internet (10)**

(Indicate whether zero deficiency report was received by the Institution for all the assessment years. Effective availability/purchase records and utilization of facilities/equipment etc. to be documented and demonstrated)

### **5.7.1. Quality of learning resources (hard/soft) (6)**

- Relevance of available learning resources including e-resources (Digital Resources)
- Accessibility to students
- Support to students for self-learning activities

### **5.7.2. Internet (4)**

- Name of the Internet provider:
- Available bandwidth:
- Wi Fi availability:
- Internet access in labs, classrooms, library and offices of all Departments:
- Cyber Security measures

<b>CRITERION 6</b>	<b>Continuous Improvement</b>	<b>75</b>
--------------------	-------------------------------	-----------

### 6.1. Actions taken based on the results of evaluation of each of the COs, POs & PSOs (30)

Identify the areas of weaknesses in the program based on the analysis of evaluation of COs, POs & PSOs attainment levels. Measures identified and implemented to improve POs& PSOs attainment levels for the assessment year including curriculum intervention, pedagogical initiatives, support system improvements, etc.

Actions to be written as per table in Table 1.6.2a and 1.6.2b

**Examples of analysis and proposed action Sample 1**-Course outcomes for a laboratory course did not measure up, as some of the lab equipment did not have the capability to do the needful (e.g., single trace oscilloscopes available where dual trace would have been better, or, non-availability of some important support software etc.). Action taken-Equipment up-gradation was carried out (with details of up-gradation)

**Sample 2**-In a course on EM theory student performance has been consistently low with respect to some COs. Analysis of answer scripts and discussions with the students revealed that this could be attributed to a weaker course on vector calculus.

Action taken-revision of the course syllabus was carried out (instructor/text book changed too has been changed, when deemed appropriate).

**Sample 3**-In a course that had group projects it was determined that the expectations from this course about PO3 (like: "to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations") were not realized as there were no discussions about these aspects while planning and execution of the project. Action taken- Project planning, monitoring and evaluation included in rubrics related to these aspects.

### POs & PSOs Attainment Levels and Actions for improvement – CAYm1 only

POs	Target Level	Attainment Level	Observations
<b>PO1: Statement as mentioned in Annexure I</b>			
PO1			
Action 1:			
Action N:			
<b>PO2: Statement as mentioned in Annexure I</b>			
PO2			
Action 1:			
Action N:			

<b>PO3: Statement as mentioned in Annexure I</b>			
<b>PO3</b>			
Action 1:			
Action N:			
<b>PO4: Statement as mentioned in Annexure I</b>			
<b>PO4</b>			
Action 1:			
Action N:			
<b>PO5: Statement as mentioned in Annexure I</b>			
<b>PO5</b>			
Action 1:			
Action N:			
<b>PO6: Statement as mentioned in Annexure I</b>			
<b>PO6</b>			
Action 1:			
Action N:			
<b>PO7: Statement as mentioned in Annexure I</b>			
<b>PO7</b>			
Action 1:			
Action N:			
<b>PO8: Statement as mentioned in Annexure I</b>			
<b>PO8</b>			
Action 1:			
Action N:			
<b>PO9: Statement as mentioned in Annexure I</b>			
<b>PO9</b>			
Action 1:			
Action N:			

<b>PO10: Statement as mentioned in Annexure I</b>			
<b>PO10</b>			
Action 1:			
Action N:			
<b>PO11: Statement as mentioned in Annexure I</b>			
<b>PO11</b>			
Action 1:			
Action N:			
<b>PO12: Statement as mentioned in Annexure I</b>			
<b>PO12</b>			
Action 1:			
Action N:			
<b>Similar information is to be provided for PSOs</b>			

**Table B.6.1**

### **6.2. Academic Audit and actions taken thereof during the period of Assessment (10)**

(Academic Audit system/process and its implementation in relation to Continuous Improvement)

### **6.3. Improvement in Placement, Higher Studies and Entrepreneurship (15)**

*Assessment is based on improvement in:*

- *Placement: number, quality placement, core industry, pay packages etc.*
- *Higher studies: performance in GATE, GRE, GMAT, CAT etc., and admissions in premier institutions*
- *Entrepreneurs*

### **6.4. Improvement in the quality of students admitted to the program (10)**

*Assessment is based on improvement in terms of ranks/score in qualifying state level/national level entrances tests, percentage marks in Physics, Chemistry and Mathematics in 12<sup>th</sup> Standard and percentage marks of the lateral entry students.*

<b>Item</b>	<b>CAY</b>	<b>CAYm1</b>	<b>CAYm2</b>
<b>No. of Students admitted</b>			



<b>National Level Entrance Examination (Name of the Entrance Examination)</b>	<b>Opening Score/Rank</b>			
	<b>Closing Score/Rank</b>			
<b>State/Institute/Level Entrance Examination/Others (Name of the Entrance Examination)</b>	<b>No. of Students admitted</b>			
	<b>Opening Score/Rank</b>			
	<b>Closing Score/Rank</b>			
<b>Name of the Entrance Examination for Lateral Entry or lateral entry details</b>	<b>No. of Students admitted</b>			
	<b>Opening Score/Rank</b>			
	<b>Closing Score/Rank</b>			
<b>Average CBSE/Any other Board Result of admitted students (Physics, Chemistry &amp; Mathematics)</b>				

*Table B.6.4*

**6.5. Remedial action taken on the observations made during last accreditation visit/New initiatives taken/New Facilities Introduced/Improvement made after last visit. (10)**

(Provide details)

## **Declaration**

The head of the institution needs to make a declaration as per the format given below:

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institute shall fully abide by them.

It is submitted that information provided in this Self-Assessment Report is factually correct. I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA in case any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

**Date:**

**Signature & Name**

**Place:**

**Head of the Institution with seal**

## ANNEXURE I

### (A) PROGRAM OUTCOMES

#### Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

### (B) PROGRAM SPECIFIC OUTCOMES (PSOs)

Program should specify 2-4 program specific outcomes.