INTRODUCTION

The syllabus committee had taken note of the AICTE prescribed model curriculum and model syllabus for Diploma in Electrical Engineering. It had done some brain storming sessions and come out with a curriculum and syllabus which is largely in conformity with the AICTE syllabus with some prudent deviations. It will be worthwhile to have a qualitative comparison between the AICTE suggested model curriculum and WBSCTE new proposed curricular structure.

Subject and Credit point comparison:
(points in bold red are the deviations)

Semester III

WBSCTE			AICTE	
Sr No	Subject	Credit	Subject	Credit
1	Electrical Circuit & Network	5	Electrical Circuit & Network	4
2	**Electrical Machine I**	5	**Electrical Power Generation**	3
3	Basic Electronics	4	Basic Electronics	5
4	**Programming concept using C**	3	**Applied Mathematics**	3
5	Electrical Measuring Instrument	4	Electrical Measurement	4
6	Electrical Workshop	1	Electrical Workshop	2
7	Elements of Mechanical Engineering	2	Elements of Mechanical & Civil Engineering	2
8	Professional Practices I	1	Professional Practices III	2
TOTAL CREDIT POINTS		**25**		**25**

Note:

- Electrical Machine I is covered in AICTE in Semester IV as "DC Machine & Transformer" while "Electrical Power Generation" in the above AICTE list is covered in semester IV of WBSCTE syllabus.
- Programming in C is to inculcate logical reasoning / programming sense among the Engineering students. The contents of Applied Mathematics have been taken care of in Engineering Mathematics of S2 and in Electrical Circuit & Network.

Semester IV

WBSCTE			AICTE	
Sr No	Subject	Credit	Subject	Credit
1	**Electrical Machine II**	**5**	**DC Machine and Transformer**	4
2	Electrical Measurement & Control	4	Instrumentation	4
3	Transmission & Distribution of electric power	4	Transmission & Distribution of electric	3
4	Applied and Digital Electronics	4	Applied Electronics	4
5	**Power Plant Engineering**	**4**	**Electrical Estimation and Costing**	3
6	Computer aided Electrical Drawing	2	Electrical Drawing	2
7	Development of Life Skill -II	2	Development of Life Skill -II	3
8	Professional Practice - II	1	Professional Practice - II	1
TOTAL CREDIT POINTS		**26**		**24**

Note:

- Electrical Estimation and costing is included in WBSCTE syllabus in Semester VI as part of application of knowledge that students gather in all other semester.
- Power Plant Engineering is a compensation of earlier semester.
- Machine II syllabus is in tune with AICTE "AC Machine" in semester V, while "DC Machine & Transformer" is already covered in semester III under Electrical Machine I.

Semester V:

WBSCTE			AICTE	
Sr	Subject	Credit	Subject	Credit
1	Utilization, Traction , Heating and drives	4	Utilization of electrical energy	4
2	**Power Electronics and Drives**	**4**	**AC Machine**	5
3	Switchgear & Protection	4	Switchgear & Protection	5
4.	Elective I (Any One) a)Illumination Engineering b)Heating , Ventilation and Air conditioning c)Energy Conservation & Audit d) Electric Traction	4	Elective I (Any One) a) Electric Traction I b) Computer Hardware Maintenance c) Illumination Engineering	4
5.	**Microprocessor & Microcontroller**	**4**	**Elective II(Any One)** **a) Industrial Automation** **b) Energy Conservation & Audit**	4
6.	Industrial Project & Entrepreneurship Development	3	Industrial Project & Entrepreneurship Development	2
7.	Professional Practice -III	2	Professional Practice -V	2
TOTAL CREDIT POINTS		**25**		**26**

Note:

- Microprocessor and Microcontroller is kept as compulsory paper in stead of optional paper (as in AICTE) keeping in view of large scale application of controller in industries today.
- We have not considered elective II for the above reason.
- "Power Electronics and Drives" has been included in Semester VI of AICTE.

Semester VI:

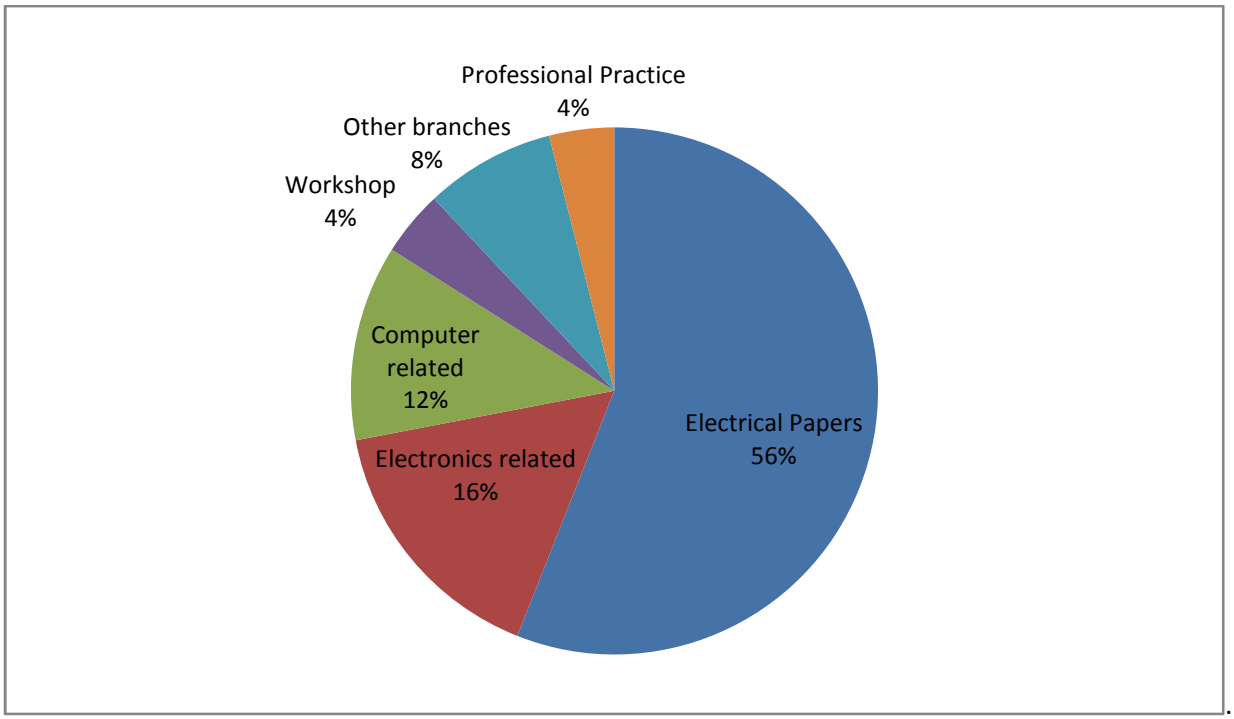
WBSCTE			AICTE	
Sr	Subject	Credit	Subject	Credit
1	**Electrical Design Estimation & Costing**	**5**	**Power Electronics and Drives**	4
2	Electrical Installation, Maintenance, Testing.	4	Testing & Maintenance of Electrical Machines	4
3	Industrial Project	3	Industrial Project	2
4	Industrial Management	3	Management	3
5	Elective II (Any One) a)Industrial Automation b)Process Control & Instrumentation c)Control of Electrical Machine d)Computer Hardware & Networking	4	Elective III (any one) a) Electric Traction II b) Maintenance & Repairs of Electrical Equipments c) Microprocessor and micro controller	4
6	Professional Practice -IV	2	Professional Practice -VI	3
7	**Electrical Workshop II**	**1**	**Heating, Ventilation & Air conditioning**	4
8	**General Viva voce**	**2**		
TOTAL CREDIT POINTS		**24**		**24**

Note:

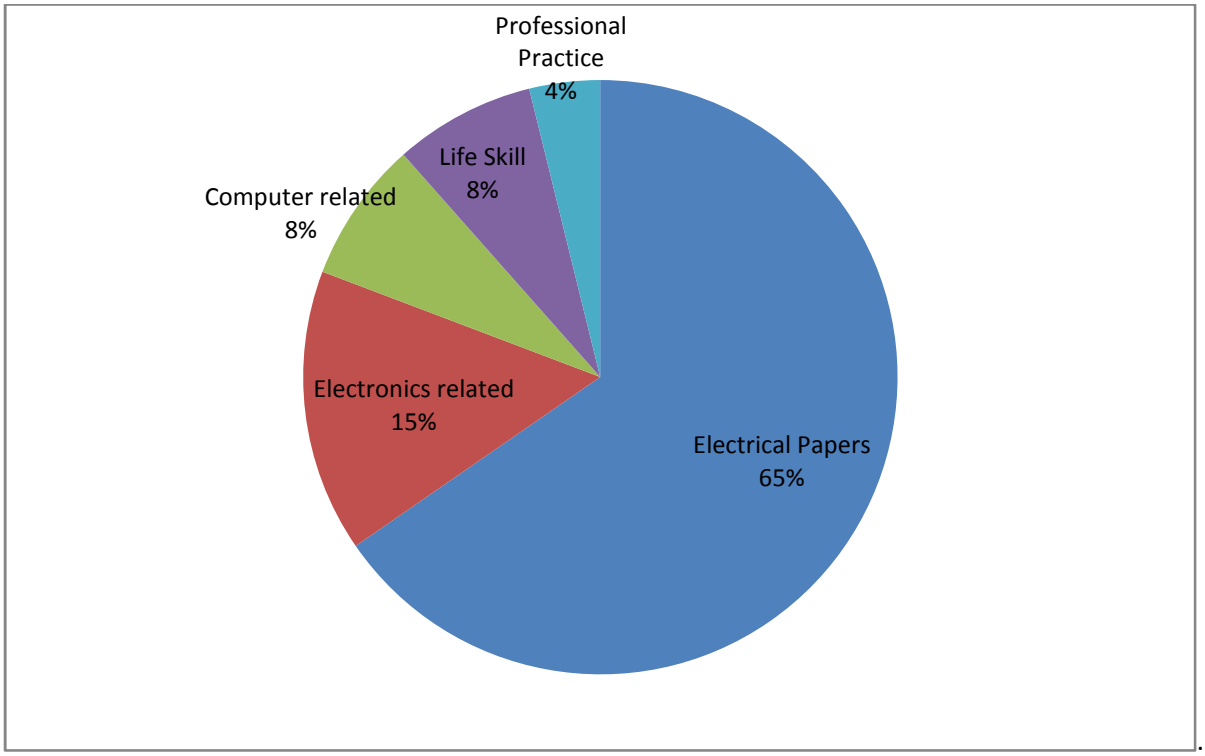
- Electrical Workshop II has been introduced to take care of the need to teach maintenance, testing, troubleshooting of electrical machines, equipments. This will help the students to work in maintenance or cater to service industries or make their own business. So "Maintenance & repair of electrical equipments" – an elective in AICTE is made compulsory paper.
- "Heating, Ventilation and Air conditioning" – a cross disciplinary subject needed for service industries, has been kept as elective in Semester V.
- General viva voce is kept as to estimate students as well as to give them a test of what to expect in various interviews ahead.

- "Process Control" and "Control of Electrical Machine" is introduced keeping in mind the demand from industries.

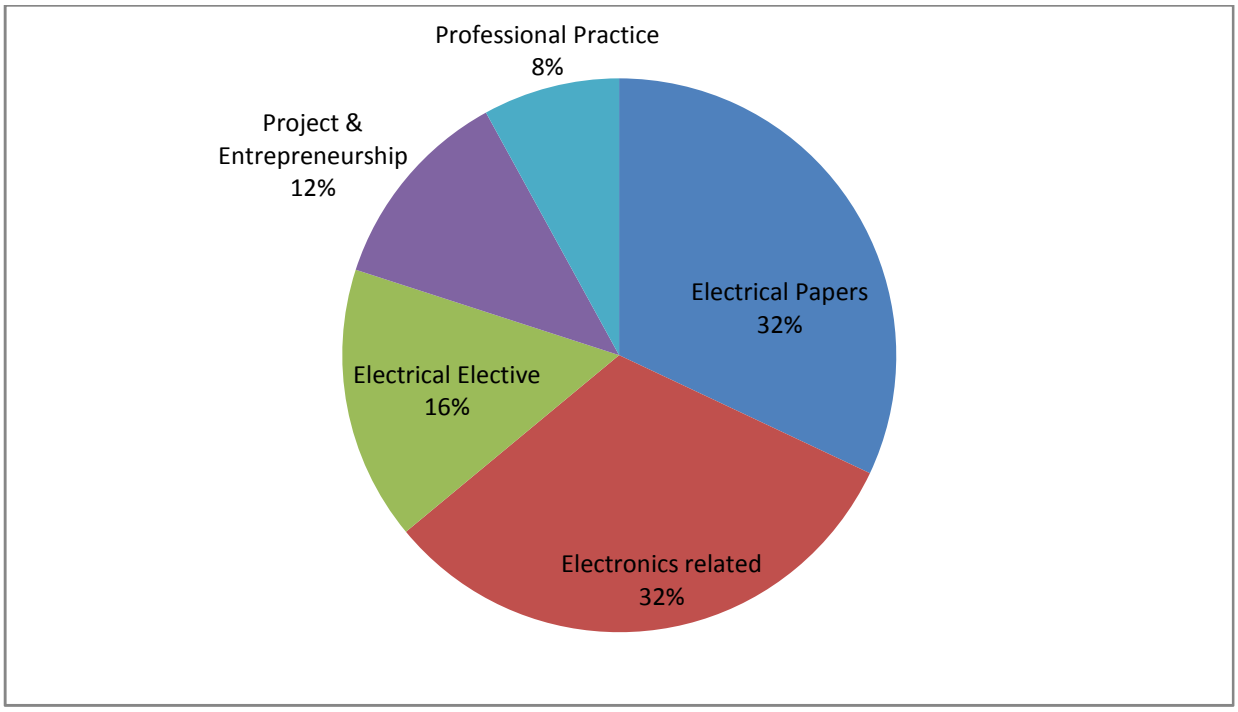
Credit Point distribution among different subjects in 3rd Semester:



Credit Point distribution among different subjects in 4th Semester:



Credit Point distribution among different subjects in 5th Semester:



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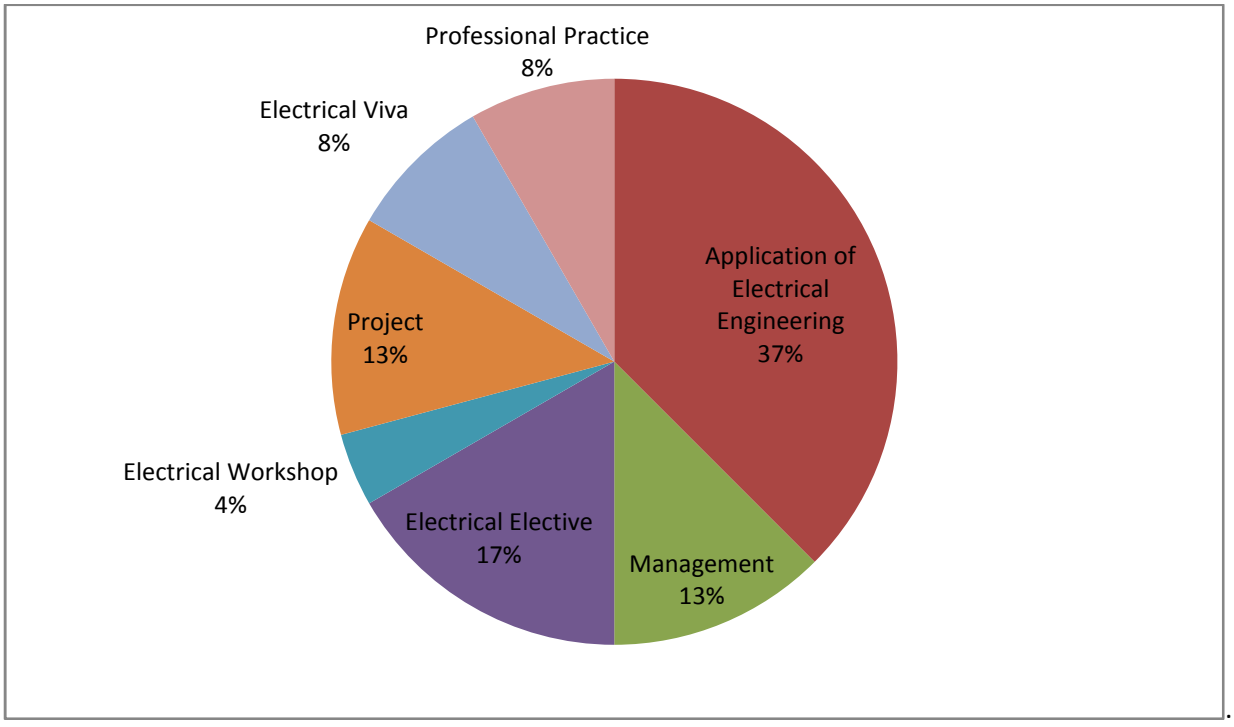
Credit Point distribution among different subjects in 6th Semester:



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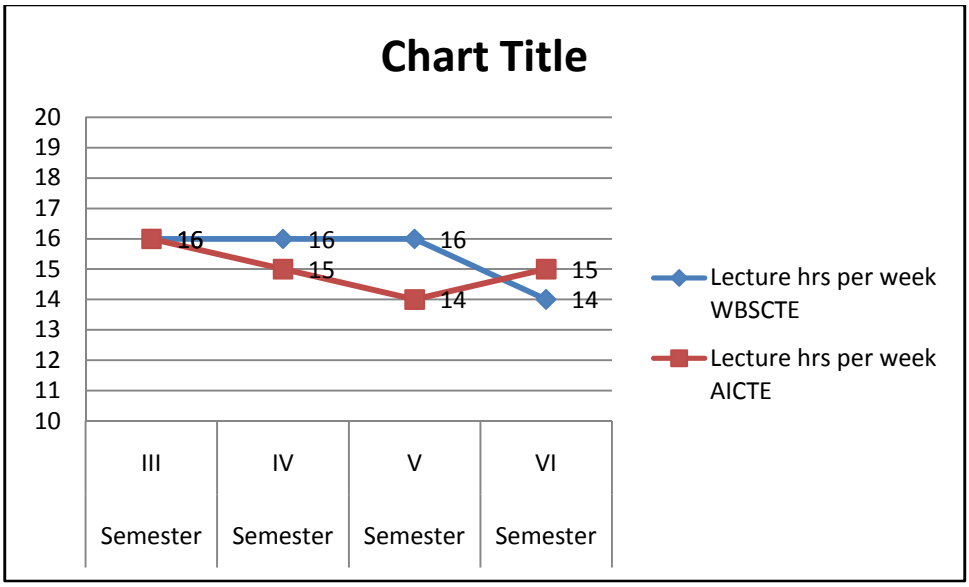
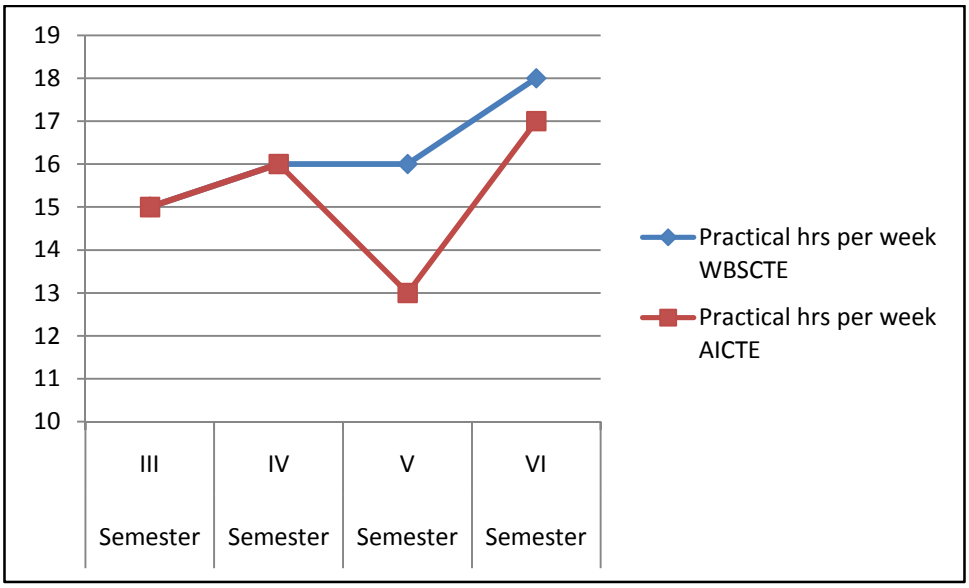
Comparison of Lecture hours per week between WBSCTE proposed curriculum structure and AICTE curriculum structure:

		Lecture hrs per week	
		WBSCTE	AICTE
Semester	III	17	16
Semester	IV	17	15
Semester	V	16	14
Semester	VI	14	15

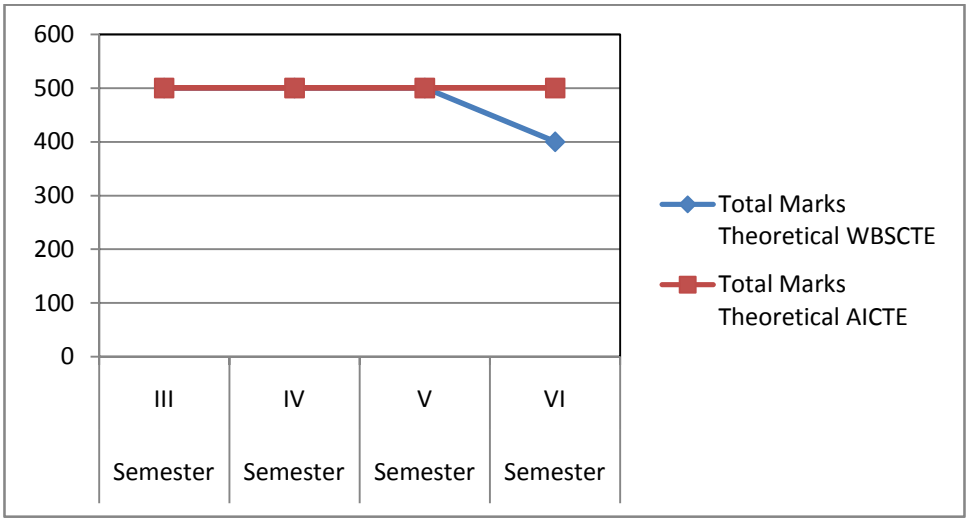


		Practical hrs per week	
		WBSCTE	AICTE
Semester	III	15	15
Semester	IV	16	16
Semester	V	16	13
Semester	VI	18	17

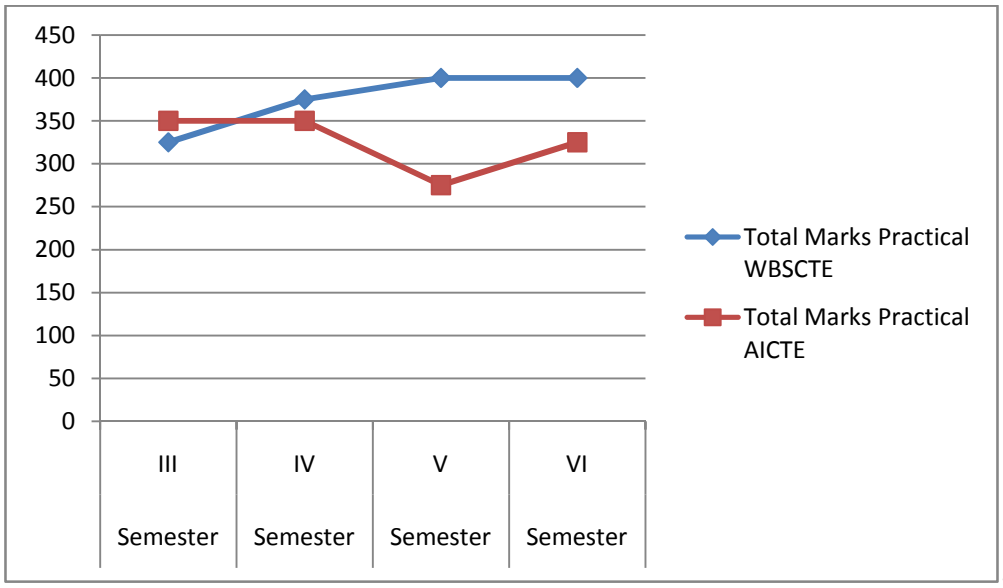


Comparison of total theoretical and Practical marks between WBSCTE proposed curriculum structure and AICTE curriculum structure

		Total Marks Theoretical	
		WBSCTE	AICTE
Semester	III	500	500
Semester	IV	500	500
Semester	V	500	500
Semester	VI	400	500

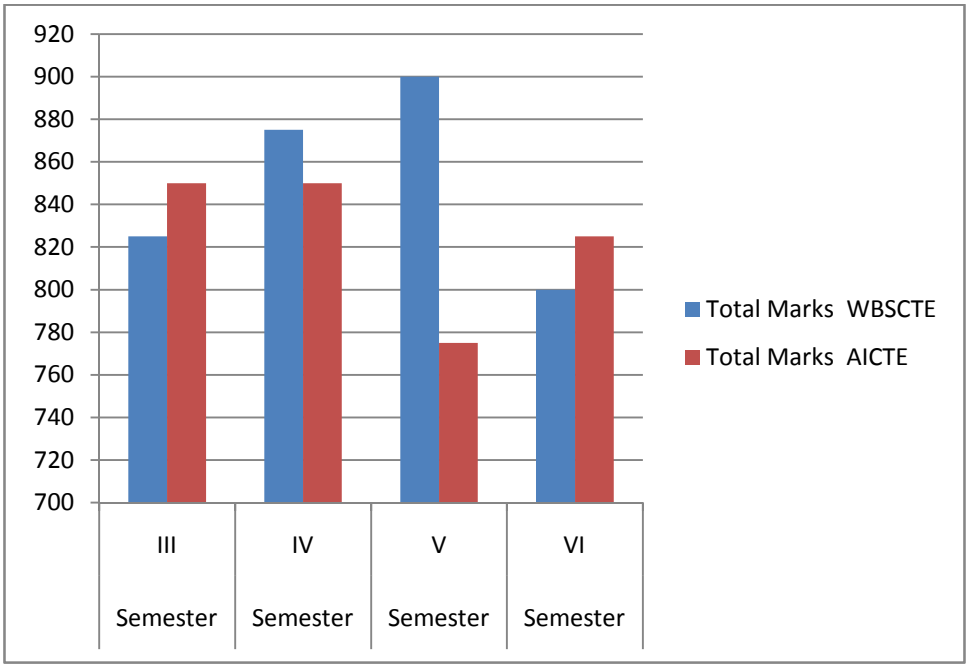


		Total Marks Practical	
		WBSCTE	AICTE
Semester	III	325	350
Semester	IV	375	350
Semester	V	400	275
Semester	VI	400	325



Comparison of total marks between WBSCTE proposed curriculum structure and AICTE curriculum structure

		Total Marks	
		WBSCTE	AICTE
Semester	III	825	850
Semester	IV	875	850
Semester	V	900	775
Semester	VI	800	825



Distribution of contact hours for the proposed syllabus:

Full Working Day:

1st Period	2nd Period	3rd Period	Recess	4th Period	5th Period	6th Period
10:30 — 11:30	11: 30 — 12:30	12:30 — 13:30	13:30 — 13:50	13:50 — 14:50	14:50 — 15:50	15:50 — 1650

Saturday:

1st Period	2nd Period	3rd Period
10:30 — 11:30	11:30 — 12:30	12:30 — 13:30

Weekly contact hours = 33

Note:

- **1 contact hours per week for all semester has been kept aside for library studies / for interaction with teachers off the class except in 4th Semester.**

Some salient points of the new syllabus:

1. **New subjects introduced:**
   - **(a)** Elements of Mechanical l Engineering (semester III)
   - **(b)** Computer aided Electrical Drawing (semester IV)
   - **(c)** Power Electronics and Drives (semester V) – concept of chopper, converter, inverter introduced for the first time in Polytechnics.
   - **(d)** Elective I : (semester V) " Illumination Engineering", "Heating Ventilation and Air conditioning", "Energy Conservation & Audit", "Electric Traction"
   - **(e)** Industrial Project & Entrepreneurship Development (semester V) – Entrepreneurship newly introduced.
   - **(f)** Elective II: (semester VI) "Industrial Automation", "Control of Electrical Machine".
   - **(g)** Electrical Workshop II (semester VI)
   - **(h)** Development of Life skill - II (semester IV)
   - **(i)** Professional Practice I, II, III,IV (semester III, IV, V, VI)

2. **Some subjects whose syllabus was reviewed and reorganized to a good extent**:
   - (a) "Basic Electronics" (semester III) and "Applied & Digital Electronics" (semester IV).
   - (b) "Electrical Measuring Instrument" (semester III)
   - (c) **"**Electrical Measurement & Control" (semester IV)
   - (d) **"**Power Plant Engineering" (semester IV)
   - (e) **"**Utilization, Traction , Heating and drives" (semester V)

3. **Other subjects had otherwise some minor changes incorporated to overcome limitations of previous syllabus e.g**.
   - (a) "Electrical Circuit & Network" (semester III)- Coupled circuit and Fourier Series removed, while Pspice included (in laboratory)
   - (b) "Electrical Machine I" (semester III) – Concept of braking in DC motor introduced.
   - (c) "Programming in C" (semester III) - reduced in size, only conceptual stage kept. Pointer, Structure and file handling omitted.
   - (d) "Electrical Machine II" (semester IV) - Linear Induction motor and Induction generator included.
   - (e) "Switchgear & protection" (semester V) – concept of neutral earthing introduced.
   - (f) "Electrical Design Estimation & Costing" (semester VI) – Costing (as per schedule), concept of contract and tender introduced. Dimension calculation of DC motor, Induction motor removed, Design of both small single phase and medium size three phase transformer introduced.
   - (g) Project in semester V: students need to submit project proposal. Actual project to be done in semester VI.
   - (h) "Microprocessor & Microcontroller" (semester V): Microcontroller Basics, 8051 interrupts, timer/counters, Application of microcontroller introduced in the theory paper.

4. **Some subjects omitted completely:**
   - (i) Environmental Engineering
   - (ii) Communication skill: This has been included in 1st year curriculum.
   - (iii) Electrical Engineering Materials.

5. **New Concepts:**
   - (i) Professional Practices in all semester. This will enhance technical knowledge of the budding engineers as well as generate techno commercial knowledge among them. They will regularly visit market places / industries etc. for such purpose. Guest lecture / seminars will need to be arranged. Also students will participate in group discussion where they will learn to express themselves. Keeping in mind the well spread out of polytechnics in various corners of the state, a wide array of alternative activities have been suggested.

   - (ii) Concept of Grand viva changed. Now all faculty members will sit and judge students instead of only external as it was in previous curriculum.

(iii) Entrepreneurship: In order to give a thrust to entrepreneurship, this was conceived. Students need to submit proposal for any entrepreneurship in their area. They can get knowledge from district industries center for such project report.

Members of the Syllabus Committee for Diploma in Electrical Engineering

Sl No.	Name of The Member	Designation & Address	Contact No.	
1.	Shri Swarup Kar	Lecturer in Electrical Engineering, North Calcutta Polytechnic, Kolkata	9433689007	Convenor
2.	Dr. Sujoy Paul	Lecturer in Electrical Engineering, North Calcutta Polytechnic, Kolkata	9432298909	Member
3.	Shri Arup Kr. Ghosh	Lecturer in Electrical Engineering, Bankura Government Polytechnic, Kalpathar, Bankura	9434083905	Member
4.	Shri Pinaki Ranjan Paul	Lecturer in Electrical Engineering, Central Calcutta Polytechnic, Kolkata	9433130215	Member
5.	Dr. Tushar Kanti Ganguly	Lecturer in Electrical Engineering, Engineering Institute of Jr. Executive, M.B. Road, Dalalpukur, Howrah	9433377354	Member
6.	Dr. (Smt.) U.Kar	Professor & Head, Curriculum Development Centre, NITTTR, Kolkata – 700 106	9831566357	Advisor
7.	Prof. Nirmal Kumar Deb	Professor, Department of Electrical Engineering, Jadavpur University, Kolkata	9830075137	Advisor
8.	Prof. Debashis Ghosh	Professor, Department of Electrical Engineering, Bengal Engineering & Science University, Shibpur, Howrah.	9433205434	Advisor
9.	Shri Sanjoy Kr. Dey	Manager, Siemens Ltd. , Sector V, Salt Lake City, Kolkata - 91	9051044110	Advisor
10.	Shri Chandra Shekhar Chakraborty	Assistant Vice – President, ABB, Kolkata	9748055866	Advisor

W.B.S.C.T.E.

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: ELECTRICAL ENGINEERING

COURSE CODE : EE

DURATION OF COURSE : 6 SEMESTER

SEMESTER: THIRD SEMESTER **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	T	P	SESSIONSAL EXAM			ESE	PR(INT.)	PR (EXT.)		
					TA	CT	Total					
1	Electrical Circuit & Network	03	01	02	10	20	30	70	25	25		5
2	Electrical Machine I	03	_	03	10	20	30	70	25	50		5
3	Basic Electronics	03	--	02	10	20	30	70	25	25		4
4	Programming concept using C	02	--	02	5	10	15	35				3
5	Electrical Measuring Instrument	03	--	02	10	20	30	70	25	25		4
6	Electrical Workshop I	--	--	02	--	--	--	--	25	25		1
7	Elements of Mechanical Engineering	02			5	10	15	35				2
8	Professional Practices I	--	--	02	--	--	--	--	50			1
	Total	**16**	**01**	**15**	**50**	**100**	**150**	**350**	**175**	**150**		**25**

STUDENT CONTACT HOURS PER WEEK: **32**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, T - Tutorial, PR (INT.) – Practical (Internal) PR(EXT.)- Practical(External), ESE - End Semester Exam.

TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.

Total Marks : 825

Minimum passing for sessional marks is 40%, and for theory subject 40%.

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W.B.S.C.T.E.

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: ELECTRICAL ENGINEERING

COURSE CODE : EE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: FOURTH SEMESTER **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	T	P	SESSIONSAL EXAM			ESE	PR(INT.)	PR (EXT.)		
					TA	CT	Total					
1	Electrical Machine II	03		03	10	20	30	70	25	50		5
2	Electrical Measurement & Control	03	--	02	10	20	30	70	25	25		4
3	Transmission & Distribution of Power	03	_	02	10	20	30	70	25	25		4
4	Applied and Digital Electronics	03	--	02	10	20	30	70	25	25		4
5	Power Plant Engineering	04	--		10	20	30	70				4
6	Computer aided Electrical Drawing		--	03	--	--	--	--	25	25		2
7.	Development of Life Skill - II	01	--	02					25	25		2
8.	Professional Practice - II			02					50			1
	Total	**17**		**16**	**50**	**100**	**150**	**350**	**200**	**175**		**26**

STUDENT CONTACT HOURS PER WEEK: **33 HRS**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, T - Tutorial, PR (INT.) – Practical (Internal) PR(EXT.)- Practical(External), ESE - End Semester Exam.

TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.

Total Marks : 875

Minimum passing for sessional marks is 40%, and for theory subject 40%.

W.B.S.C.T.E.

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: ELECTRICAL ENGINEERING

COURSE CODE : EE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: FIFTH SEMESTER **SCHEME : C**

Sr.No	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY				SESSIONSAL EXAM				PR(INT.)	PR (EXT.)		
		L	T	P	TA	CT	Total	ESE				
1	Power Electronics and Drives	03		02	10	20	30	70	25	25		4
2	Microprocessor & Microcontroller	03	--	02	10	20	30	70	25	25		4
3	Switchgear & Protection	03		02	10	20	30	70	25	50		4
4	Industrial Project & Entrepreneurship Development	01	--	03					25	50		3
5	Utilization, Traction , Heating and drives	03		02	10	20	30	70	25	25		4
6	Elective I (Any One)	03	--	02	10	20	30	70	25	25		4
	Illumination Engineering											
	Heating , Ventilation and Air conditioning											
	Energy Conservation & Audit											
	Electric Traction											
7	Professional Practice -III			03					50			2
	Total	**16**		**16**	**50**	**100**	**150**	**350**	**200**	**200**		**25**

STUDENT CONTACT HOURS PER WEEK: **32 HRS**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, T - Tutorial, PR (INT.) – Practical (Internal) PR(EXT.)- Practical(External), ESE - End Semester Exam.

TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.

Total Marks : 900

Minimum passing for sessional marks is 40%, and for theory subject 40%.

W.B.S.C.T.E.

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA COURSES

COURSE NAME: ELECTRICAL ENGINEERING

COURSE CODE : EE

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: SIXTH SEMESTER **SCHEME : C**

Sr.No	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
					SESSIONSAL EXAM				PR(INT.)	PR (EXT.)		
	THEORY	L	T	P	TA	CT	Total	ESE				
1	Electrical Design Estimation & Costing	04		03	10	20	30	70	25	25		5
2	Electrical Installation , Maintenance , Testing	04			10	20	30	70				4
3	Industrial Project			05					50	50		3
4.	Electrical Workshop II			03					25	25		1
5.	Industrial Management	03			10	20	30	70				3
6.	Elective II (Any One)	03	--	03	10	20	30	70	25	25		4
	Industrial Automation											
	Process Control & Instrumentation											
	Control of Electrical Machine											
	Computer Hardware & Networking											
6	Professional Practice -IV			04					50			2
7	General Viva voce								100			2
	Total	**14**		**18**	**40**	**80**	**120**	**280**	**275**	**125**		**24**

STUDENT CONTACT HOURS PER WEEK: **32 HRS**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, T - Tutorial, PR (INT.) – Practical (Internal) PR(EXT.)- Practical(External), ESE - End Semester Exam.

TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.

Total Marks : 800

Minimum passing for sessional marks is 40%, and for theory subject 40%.