

ELECTRICITY AND ELECTRONICS (866)

CLASS XII

PAPER II (PROJECT WORK FOR CLASS XII): 20 Marks

The Project work will be assessed by the subject teacher and the Visiting Examiner appointed locally and approved by the Council.

All candidates will be required to have completed **two** projects from any topic/s covered in theory.

Mark allocation for each project (10 marks) *:

Criteria		Marks
1.	Title of the Project and Introduction	1
2.	Content	3
3.	Presentation and originality	2
4.	Conclusion/Comments/Summary	1
5.	Viva- Voce (Visiting Examiner)	3
TOTAL		10

List of suggested assignments for Project Work:

1. Electrical accessories (any five), meters and equipment (any three) used in the laboratory (along with precautions to be observed).

Accessories (tools) used in Laboratory: Soldering gun, soldering stand, solder (lead), nose plier, wire stripper, line tester, tag-board, breadboard, general purpose printed circuit board (PCB).

Meters and equipment: DC milliammeter, AC milliammeter, DC Voltmeter, AC voltmeter, Digital Multimeter, Variable DC power supply, Fixed DC power supply, Audio signal generator, Cathode Ray Oscilloscope (CRO).

2. Electrical Cables, their types, uses and specifications. *(Any 5 types, with one use and important specifications).*
3. Measuring the values of different types of:
 - (i) resistors using colour code
 - (ii) capacitors using code number .

Writing the procedure to measure the values of resistances, capacitances and inductances using multimeter.

4. Different types of switches (any five), circuit protecting devices and their specifications.

Switches: single-pole, single-throw (SPST), single-pole, double-throw (SPDT), double-pole, single-throw (DPST), double-pole, double-throw (DPDT), Rotary switch, Push Button switch, relay. Miniature circuit breaker (MCB), fuse, fuse holder (show samples), switch action (continuity and discontinuity using multimeter) Specifications; current and voltage ratings.

5. Distribution of electric power (D.C and A.C distribution) using overhead and underground cables along with their advantages and uses.
6. V-I Characteristics of a semiconductor diode (PN), its types and use of any one type of semiconductor diode.
7. V-I Characteristics of a Zener Diode and its use as a voltage regulator.
8. Half wave and Full wave rectifier (either centre-tapped or bridge type) with/without filter circuit.
9. Electrical accessories (Power outlets, lamp holders, ceiling roses and junction boxes) their structure and uses.
10. Simple circuitry of lighting and power circuits (domestic use), their layout and limitations, following IEE regulations.
11. Principle, construction and working of DC motor with explanation of any one type of DC motor.
12. Characteristics of DC generator and DC motor.
13. Types of microphones (any two) giving their construction, working and uses with diagrams.
14. Types of loudspeakers (any two) giving their construction, working and uses with diagrams.

15. Construction and working principle of power supply including common faults, causes, testing and repair.
16. Multimeters and their types including functions of any one type of multimeter.
17. Transistor Audio Power Amplifiers (any two types), their advantages, disadvantages and uses.
18. Principle, construction, working and uses of Cathode Ray Oscilloscope.

NOTE: No question paper for Project work will be set by the Council.

SAMPLE TABLE FOR PROJECT WORK

S. No.	Unique Identification Number (Unique ID) of the candidate	<u>PROJECT 1</u>					<u>PROJECT 2</u>					TOTAL MARKS
		A	B	C	D	E	F	G	H	I	J	
		Teacher	Visiting Examiner	Average Marks (A + B ÷ 2)	Viva-Voce by Visiting Examiner	Total Marks (C + D)	Teacher	Visiting Examiner	Average Marks (F + G ÷ 2)	Viva-Voce by Visiting Examiner	Total Marks (H + I)	
		7 Marks	7 Marks	7 Marks	3 Marks	10 Marks	7 Marks	7 Marks	7 Marks	3 Marks	10 Marks	20 Marks
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

*For breakup of the 7 Marks to be awarded separately by the Teacher and the Visiting Examiner, please refer to the table giving the criteria for mark allocation for *each* project.

NOTE: VIVA-VOCE (3 Marks) for each Project is to be conducted only by the Visiting Examiner and should be based on the Project only.