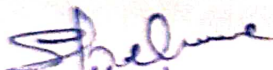


Gramgeeta Mahavidyala Chimur Dist. Chandrapur  
Department of Physics  
Certificate Course on  
Basic Electrical and Electronics Instrumentation  
Session 2019-20

Notice

Date : 2-12-2019

All the students of BSc hereby informed that Department of Physics Start up certificate course in **Basic Electrical and Electronics Instrumentation**. Interested students can register their name to course coordinator at the Department of Physics. Within 8 days from the notice .This course will be resumed on the 16<sup>th</sup> december 2019.



Head

Department of Physics  
Gramgeeta Mahavidyalay, Chimur  
Course Coordinator



Dr. Amir Dhamani

Principal  
Principal  
Gramgeeta Mahavidyalaya  
Chimur, Dist. Chandrapur

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

*Certificate Course On*

Basic Electrical and Electronics Instrumentation

Session 2019-20

Notice

All the students of BSc III year hereby informed that their certificate course classes will from 16 December 2019. You are requested to attend the class regularly as on their time table. Time table is displayed on notice board of department of Physics.

Date- 5 -12-2019



Course Coordinator

Prof.S.R. Bhelave  
Head

Department of Physics  
Gramgeeta Mahavidyalay, Chimur



Principal

Dr. Amir Dhamani

Principal  
Gramgeeta Mahavidyalaya  
Chimur, Dist. Chandrapur

**Gramgeeta Mahavidyalaya Chimur**

**Department of Physics**

**Certificate course on**

**Basic Electrical and Electronics Instrumentation**

Sr. No.	Heading	Particulars
1	Title of the Course	Basic Electrical and Electronics Instrumentation
2	Eligibility for Admission	Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science
3	Passing Marks	The candidate must obtain 40% of the total marks in theory and practical separately to pass the course.
4	No. of Years/Semesters	Six month (one Terms)
5	Level	Certificate
6	Pattern	Semester
7	To be implemented from the Academic Year	From Academic Year 2019-20

**Syllabus:-**

- Unit 1



Current ,voltage ,resistance Measurements, Electric Board construction

- **Unit 2**

Logic gates, Flip Flops, Encoder, Decoder, Multiplexer, De multiplexer, A/D, D/A converters, Microprocessors and microcontroller, IC and their Construction

- **Unit 3**

Diode applications: Half-wave rectifier, Full-wave rectifier (with and without filter), Clipper and Clamper, Voltage multiplier and SMPS Construction.

- **Unit 4**

Special purpose diodes and their applications: Working principle and application of Zener diode, Varactor diode, LED, PIN diode and Laser diode.

### Practicals:-

1. Design the Half wave and full wave rectifier
2. Design the various types of gate and check the output using LED
3. Study the CRO
4. Calculate the resistance ,conductivity and other electrical parameter of wires, diode and resistor
5. Analog to digital converter using the IC
6. Study the characteristics of Zener diode

### Objective:-

Students will try to learn:

1. To understand operation of semiconductor devices.
2. To understand DC analysis and AC models of semiconductor devices.
3. To understand concept of the operation of basic electronics equipment's



4. To verify the theoretical concepts through laboratory and simulation experiments.
5. To implement mini projects based on concept of electronics and circuit.

### Outcome:-

After successful completion of the course student will be able to

1. Understand the current voltage characteristics of semiconductor devices,
2. Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation.
3. Design and analyze of electronic circuits.
4. Evaluate frequency response to understand behavior of Electronics circuits.
5. Manipulate voltages, currents and resistances in electronic circuits.
6. Demonstrate familiarity with basic electronic components and use them to design simple electronic circuits

### **Books and References Recommended**

- Electronic Devices and Circuits, S. Salivahanam
- Basic Electronics , B.L. Thereja
- Electrical & Basic Electronics Theory, RK Jangid

## **MODE OF ASSESSMENT: Total 100 marks**

### **Internal Assessment : 10 marks**

The internal assessment carry 10 marks which is based on the presenty

### **Practical Exam : 30 marks**

Practical Examination Pattern: There will not be any external examination/ evaluation for practical.

Term end practical examination:-

Sr. No.	Particulars	Marks
1	Laboratory work	20
2	Viva voce	10

### **Term End Theory Assessment – 50 marks**

- Duration -These examinations shall be of 1 hour's duration.
- Total 50 number of questions
- Multiple question paper pattern.
- Each question carry 1 marks.
- All questions shall be compulsory with internal choice.
- Minimum 40 % required to get the certificate.

Gramgeeta Mahavidyalaya Chimur

Department of Physics

Certificate course on

Basic Electrical and Electronics Instrumentation

Time Table

Duration- 30 hours

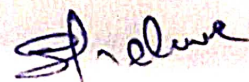
Day	Time	Class
Monday	7.00 a.m. – 8.00 a.m.	Theory (Prof.S.R. Bhelave)
Tuesday	7.00 a.m. – 8.00 a.m.	Theory ( Prof.Pranali Tembhurne)
Wednesday	7.00 a.m. – 8.00 a.m.	Practical (Prof.S.R. Bhelave)

Practical Examination: - 2 March

Timing – 3.00 pm – 5.00 pm

Theory Examination:- 3 March

Timing – 3.00 pm- 4.00 pm



Course Coordinator

S.R. Bhelave

Head

Department of Physics  
Gramgeeta Mahavidyalay, Chimur



Gramgeeta Mahavidyalaya Chimur

Department of Physics

Certificate course on

Basic Electrical and Electronics Instrumentation

List of Students Enrolled

<u>Sr. No.</u>	<u>Name of Student</u>	<u>Signature of students</u>
1	BANGADE AKSHAYRAJ WAMANRAO	Akshraj
2	DADMAL PUNAM PATRUJI	Punam Dadmal
3	DANGE ACHAL SADASHIO	Achal
4	JIWTODE PAYAL GOVINDRAO	P. Jiwtoode
5	KORWATE MAMTA NANDAKISHOR	Mamta
6	MASRAM SAGAR KANTHIRAM	Sagar
7	MESHRAM PRANAY RAIBHAN	Pranay Meshram
8	PIMPALKAR DAYASHREE PRADIP	P. Pimpalkar
9	SHEIKH AKIB ARIF	Akib
10	SONKUSARE KARISHMA SURESH	Karishma

*Shelave*

Course Coordinator

Prof. S.R. Bhelave  
Head

Department of Physics  
Gramgeeta Mahavidyalay, Chimur

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

**Certificate Course In**

**Basic Electricals and Electronics Instrumentation**

Session 2019-20

**Students Registration Form**

Registration No. 1 (For only official use) Date- 6-12-2019

Name of the student Akshayraj W. Bangade

Class B. se Final year Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Gender \_\_\_\_\_ Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known – Hindi ,English , Marathi

Akshayraj

Name & Signature of Applicant

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

**Certificate Course In**

**Basic Electricals and Electronics Instrumentation**

Session 2019-20

**Students Registration Form**

Registration No. 2 (For only official use) Date- 6-12-2019

Name of the student Punam Patruji Dadmal

Class BSc III Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Gender Indian Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known – Hindi , English , Marathi

Punam Dadmal  
Name & Signature of Applicant



Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

**Certificate Course In**

**Basic Electricals and Electronics Instrumentation**

Session 2019-20

**Students Registration Form**

Registration No. (3)... (For only official use)      Date- 5-12-2019

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Name of the student      Achal Sadashiva Dange

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Class BSc III      Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Gender Indian      Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known – Hindi , English , Marathi

Achal

Name & Signature of Applicant

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

Certificate Course In

Basic Electricals and Electronics Instrumentation

Session 2019-20

Students Registration Form

Registration No. 4 (For only official use) Date- 7-12-2019

Name of the student Payal Govindrao Jiwode

Class BSe III Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Indian Gender Indian Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known – Hindi , English , Marathi

P. Jiwode  
Name & Signature of Applicant

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

Certificate Course In

Basic Electricals and Electronics Instrumentation

Session 2019-20

Students Registration Form

Registration No. (5) (For only official use) Date- 7-12-2019

Name of the student

Namta Nandkeshore Keshwate

Class

BSc III

Medium

English

Name of College

Gramgeeta Mahavidyalaya Chimur

Nationality Gender

Indian

Date of Birth

Email ID

Language Known – Hindi ✓, English ✓, Marathi ✓

Namta

Name & Signature of Applicant



Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

**Certificate Course In**

**Basic Electricals and Electronics Instrumentation**

Session 2019-20

**Students Registration Form**

Registration No. (6) (For only official use) Date-

Name of the student

Sagar Kantiram Massam

Class

Bse 11

Medium

English

Name of College

Gramgeeta

Mahavidyalaya

Chimur

Nationality Gender

Indian

Date of Birth

Email ID

Language Known – Hindi,  English,  Marathi

Sagar

Name & Signature of Applicant

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

Certificate Course In

Basic Electricals and Electronics Instrumentation

Session 2019-20

**Students Registration Form**

Registration No. 7..... (For only official use) Date- 8-12-2019

Name of the student Pranay Raibhan Mechrum

Class Bse III Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Gender Indian Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known – Hindi, English, Marathi

Pranay Mechrum  
Name & Signature of Applicant

Gramgeeta Mahavidyala Chimur Dist. Chandrapur  
Department of Physics  
Certificate Course In  
Basic Electricals and Electronics Instrumentation  
Session 2019-20  
Students Registration Form

Registration No. 8 (For only official use) Date-

Name of the student Dayashree Pradip Pimpalkar

Class BSc III Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Indian Gender Female Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known – Hindi ✓, English ✓, Marathi ✓

Pimpalkar  
Name & Signature of Applicant



Government Mahavidyala Chimur Dist. Chandrapur  
Department of Physics  
Certificate Course In  
Basic Electricals and Electronics Instrumentation

Session 2019-20

Students Registration Form

Registration No. 811 (For only official use) Date- 8 - 12 - 2019

Name of the student Akib Anif Seikh

Class BSc III Medium English

Name of College Gramgeeta Mahavidyalya Chimur

Nationality Gender Indian Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known - Hindi, English, Marathi ✓

A Seikh

Name & Signature of Applicant

Gramgeeta Mahavidyala Chimur Dist. Chandrapur

Department of Physics

Certificate Course In

Basic Electricals and Electronics Instrumentation

Session 2019-20

Students Registration Form

Registration No. 10 (For only official use) Date- 8-12-2019

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Name of the student Karishma Suresh Sankusare

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Class BSc III Medium English

Name of College Gramgeeta Mahavidyalaya Chimur

Nationality Gender Indian Date of Birth \_\_\_\_\_

Email ID \_\_\_\_\_

Language Known - Hindi , English , Marathi

Karishma  
Name & Signature of Applicant

Gramgeeta Mahavidyalaya Chlmur

Department of Physics

Certificate course on

Basic Electrical and Electronics Instrumentation

Attendance Sheet

Sr. No.	Name of Student	Dates														
		16/12/2019	17/12/2019	18/12/2019	23/12/2019	24/12/2019	30/12/2019	31/12/2019								
1	BANGADE AKSHAYRAJ WAMANRAO	P	P	P	P	.	P	P								
2	DADMAL PUNAM PATRUJI	P	.	P	P	P	P	P								
3	DANGE ACHAL SADASHIO	P	P	P	P	P	.	P								
4	JIWTODE PAYAL GOVINDRAO	.	P	P	P	.	P	.								
5	KORWATE MAMTA NANDAKISHOR	.	P	P	.	P	P	P								
6	MASRAM SAGAR KANTHIRAM	P	P	P	P	P	.	P								
7	MESHARAM PRANAY RAIBHAN	P	P	P	P	.	P	P								
8	PIMPALKAR DAYASHREE PRADIP	.	.	.	.	.	.	.								
9	SHEIKH AKIB ARIF	P	P	P	P	P	.	P								
10	SONKUSARE KARISHMA SURESH	P	P	P	P	P	P	.								

*Shelone*

Course Coordinator

Head

Department of Physics  
Gramgeeta Mahavidyalay, Chlmur



Gramgeeta Mahavidyalaya Chimmur

Department of Physics

Certificate course on

Basic Electrical and Electronics Instrumentation

Attendance Sheet

Sr. No.	Name of Student	Dates										
		3/2/20	4/2/20	5/2/20	10/2/20	11/2/20	12/2/20	17/2/20	18/2/20	24/2/20	25/2/20	28/2/20
1	BANGADE AKSHAYRAJ WAMANRAO	.	P	P	.	P	P	P	.	P	P	P
2	DADMAL PUNAM PATRUJI	P	.	P	P	P	P	.	P	P	P	.
3	DANGE ACHAL SADASHIO	P	P	P	P	.	P	P	P	P	P	P
4	JIWTODE PAYAL GOVINDRAO	P	P	P	.	P	P	P	.	P	.	P
5	KORWATE MAMTA NANDAKISHOR	P	.	P	P	P	.	P	P	P	P	P
6	MASRAM SAGAR KANTHIRAM	P	P	P	P	.	P	P	P	P	.	P
7	MESHARAM PRANAY RAIBHAN	P	P	P	.	P	P	.	P	P	.	P
8	PIMPALKAR DAYASHREE PRADIP	.	.	.	.	.	.	.	.	.	.	.
9	SHEIKH AKIB ARIF	P	P	P	P	P	P	P	P	P	P	P
10	SONKUSARE KARISHMA SURESH	P	P	P	.	P	P	P	P	P	P	P

*[Handwritten Signature]*

Course Coordinator

Department of Physics  
Gramgeeta Mahavidyalaya, Chimmur

Gramgeeta Mahavidyalaya Chimur

Department of Physics

Certificate course on

Basic Electrical and Electronics Instrumentation

Attendance Sheet

Sr. No.	Name of Student	Dates													
		6/1/20	7/1/20	8/1/20	13/1/20	14/1/20	20/1/20	21/1/20	22/1/20	24/1/20	28/1/20	29/1/20			
1	BANGADE AKSHAYRAJ WAMANRAO	P	P	P	P	.	P	P	P	P	P	.			
2	DADMAL PUNAM PATRUJI	P	.	P	P	P	.	P	P	P	.	P			
3	DANGE ACHAL SADASHIO	P	P	.	P	P	P	.	P	P	P	.			
4	JIWTODE PAYAL GOVINDRAO	P	P	P	.	P	P	P	.	P	P	P			
5	KORWATE MAMTA NANDAKISHOR	P	P	.	P	P	P	P	.	P	P				
6	MASRAM SAGAR KANTHIRAM	P	P	P	.	P	P	P	P	P	.	P			
7	MESHARAM PRANAY RAIBHAN	P	P	P	P	.	P	P	.	P	P	.			
8	PIMPALKAR DAYASHREE PRADIP	.	.	.	.	.	.	.	.	.	.	.			
9	SHEIKH AKIB ARIF	P	.	P	P	.	P	P	P	.	P	P			
10	SONKUSARE KARISHMA SURESH	.	P	P	P	P	.	.	P	P	.	P			

*Shubham*

Course Coordinator

Department of Physics  
Gramgeeta Mahavidyalay, Chimur

# BASIC ELECTRONICS

## Certificate Course

Theory Exam Session 2019-20

### OBJECTIVE TYPE QUESTIONS

Time : 1 hours and Marks: 50

- 1) Flow of electrons is generally termed as \_\_\_\_\_.
  - a. electric current
  - b. electric shock
  - c. semiconductor
  - d. none of the above
  
- 2) A \_\_\_\_\_ is a material which offers very little resistance to the flow of current through it.
  - a. good conductor
  - b. insulator
  - c. semiconductor
  - d. none of the above
  
- 3) The resistance offered by \_\_\_\_\_ is extremely large for the flow of current through it.
  - a. good conductor
  - b. insulator
  - c. semiconductor
  - d. none of the above
  
- 4) The materials which behave like perfect insulators at low temperatures & at higher temperatures, they behave like a good conductors are termed as \_\_\_\_\_.
  - a. good conductor



- b. insulator
- c. semiconductor
- d. none of the above

5) The conductivity of a semiconductor \_\_\_\_\_ with temperature.

- a. increases
- b. decreases
- c. can't say
- d. none of the above

6) The conductivity of a good conductor \_\_\_\_\_ with temperature.

- a) increases
- b) decreases
- c) can't say
- d) none of the above

7) The resistance of a semiconductor \_\_\_\_\_ with temperature.

- a) increases
- b) decreases
- c) can't say
- d) none of the above

8) The resistance of a good conductor \_\_\_\_\_ with temperature.

- a. increases
- b. decreases
- c. can't say
- d. none of the above

9) The charge of an electron is \_\_\_\_\_.

- a.  $1.602 \times 10^{+27}$  Coulomb
- b.  $1.602 \times 10^{-27}$  Coulomb
- c.  $1.602 \times 10^{+19}$  Coulomb
- d.  $1.602 \times 10^{-19}$  Coulomb

- 10) The total number of electrons in an atom depends upon \_\_\_\_\_.
- the atomic mass
  - the atomic weight
  - the atomic number
  - the atomic size
- 11) The voltage out of an ideal voltage source is
- Zero
  - Constant
  - Load resistance dependent
  - Internal resistance dependent
- 12) The current out of an ideal current source is
- Zero
  - Constant
  - Load resistance dependent
  - Internal resistance dependent
- 13) The current out of an ideal current source is
- Zero
  - Constant
  - Load resistance dependent
  - Internal resistance dependent
- 14) The path between two points along which an electrical current can be carried is called
- A network
  - A relay
  - A circuit
  - A loop
- 15) The formula for current as per Ohm's Law is
- Voltage / Resistance
  - Resistance \* Voltage
  - Voltage + Resistance
  - Resistance / Voltage
- 16) The unit of electrical resistance is
- Volt

- 23) **An intrinsic semiconductor at room temperature has**
- A. A few free electrons and holes
  - B. Many holes
  - C. Many free electrons
  - D. No holes
- 24) **At room temperature, an intrinsic semiconductor has some holes in it due to**
- A. Doping
  - B. Free electrons
  - C. Thermal energy
  - D. Valence electrons
- 25) **The number of holes in an intrinsic semiconductor is**
- A. Equal to number of free electrons
  - B. Greater than number of free electrons
  - C. Less than number of free electrons
  - D. None of the above
- 26) **Holes act as**
- A. Atoms
  - B. Crystals
  - C. Negative charges
  - D. Positive charges
- 27) **Pick the odd one in the group**
- A. Conductor
  - B. Semiconductor
  - C. Four valence electrons
  - D. Crystal structure
- 28) **To produce P-type semiconductors, you need to add**
- A. Trivalent impurity
  - B. Carbon
  - C. Pentavalent impurity
  - D. Silicon



- 29) **A Diode is a**
- A. Bilateral Device
  - B. Nonlinear Device
  - C. Linear Device
  - D. Unipolar Device
- 30) **The diode current is large for which condition**
- A. Forward Bias
  - B. Inverse Bias
  - C. Poor Bias
  - D. Reverse Bias
- 31) **The output voltage signal of a bridge rectifier is**
- A. Half-wave
  - B. Full-wave
  - C. Bridge-rectified signal
  - D. Sine wave
- 32) **Zener diode can be described as**
- A. A rectifier diode.
  - B. A device with constant – voltage.
  - C. A device with constant – current.
  - D. A device that works in the forward region.
- 33) **If the Zener Diode is connected in wrong polarity, the voltage across the load is**
- A. 0.7 V
  - B. 10 V
  - C. 14 V
  - D. 18 V
- 34) **The size comparison between Base, Emitter and Collector is**
- A. Base > Collector > Emitter
  - B. Emitter > Collector > Base
  - C. Collector > Emitter > Base
  - D. All are equal

- 35) **The Base – Collector Diode (Base Collector Junction) is usually**
- A. Reverse Biased
  - B. Forward Biased
  - C. Breakdown Region
  - D. No Conduction
- 36) **The DC Current Gain of a Transistor is**
- A. Ratio of Emitter Current to Collector Current
  - B. Ratio of Base Current to Emitter Current
  - C. Ratio of Collector Current to Base Current
  - D. Ratio of Base Current to Collector Current
- 37) **If base current is  $100\mu\text{A}$  and current gain is 100, then collector current is**
- A. 1A
  - B. 10A
  - C. 1mA
  - D. 10mA
- 38) **The majority carriers in NPN and PNP Transistors are**
- A. Holes and Electrons
  - B. Electrons and Holes
  - C. Acceptor Ions and Donor Ions
  - D. None
- 39) **A Transistor acts as a**
- A. Voltage Source and a Current Source
  - B. Current Source and a Resistor
  - C. Diode and Current Source
  - D. Diode and Power Supply
- 40) **The relation between Base Current  $I_B$ , Emitter Current  $I_E$  and Collector Current  $I_C$  is**
- A.  $I_E = I_B + I_C$
  - B.  $I_B = I_C + I_E$
  - C.  $I_E = I_B - I_C$

D.  $I_c = I_b + I_e$

- 41) The total power dissipated by a transistor is a product of collector current and
- A. Supply Voltage
  - B. 0.7V
  - C. Collector – Emitter Voltage
  - D. Base – Emitter Voltage

- 42) The input impedance of Common Emitter Configuration is
- A. Low
  - B. High
  - C. Zero
  - D. Very High

- 43) The output impedance of Common Emitter Configuration is
- A. Low
  - B. Very Low
  - C. High
  - D. Zero

- 44) The current gain in Common Base configuration ( $\alpha$ ) is
- A. Ratio of Base Current to Emitter Current ( $I_B/I_E$ )
  - B. Ratio of Collector Current to Emitter Current ( $I_C/I_E$ )
  - C. Ratio of Collector Current to Base Current ( $I_C/I_B$ )
  - D. None

- 45) Relation between  $\alpha$  and  $\beta$  is
- A.  $\alpha = \beta / (\beta + 1)$
  - B.  $\beta = \alpha / (1 - \alpha)$
  - C.  $\alpha = \beta * (\beta + 1)$
  - D.  $\alpha = \beta / (\beta - 1)$

- 46) The inverter is .....



1. NOT gate
2. OR gate
3. AND gate
4. None of the above

47) The universal gate is .....

- a. NAND gate
- b. OR gate
- c. AND gate
- d. None of the above

48) The inputs of a NAND gate are connected together. The resulting circuit is .....

1. OR gate
2. AND gate
3. NOT gate
4. None of the above

49) The NOR gate is OR gate followed by .....

1. AND gate
2. NAND gate
3. NOT gate
4. None of the above

50) What is a Clamper?

.....

.....

What is a Clipper?

.....

.....