

Andhra Christian college  
GUNTUR  
DEPARTMENT OF PHYSICS

Date: 26-07-2018

**NOTICE**

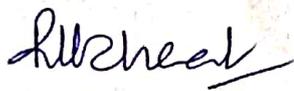
It is Notified for All concerned that Andhra Christian College, Guntur, is going to start a Certificate course on "LED BULB ASSEMBLING, USAGE & APPLICATIONS" very soon for 1<sup>st</sup>B.Sc, 2<sup>nd</sup>B.Sc & 3<sup>rd</sup>B.Sc students for their benefits in the near future.

**The last date of enrolment is: 31<sup>st</sup> July, 2018**

Course Coordinator: **Dr. M. Ratna Raju**, Lecturer, Department of Physics

**Note:**

1. The course is free of cost and the successful candidates will be issued certificates by college which will help them in future.
2. Admission is on First come First Serve Basis. Number of seats is limited.



**Head of the Department**  
(Department of physics)

Department of Physics  
A.C. College, Guntur.



PRINCIPAL  
Andhra Christian College  
Principal  
PRINCIPAL  
Andhra Christian College  
GUNTUR.

## CERTIFICATE COURSE 2018-19

Department Conducts a Certificate course on "LED BULB ASSEMBLING, USAGE AND APPLICATIONS". The Duration of the Course is 30 hours. This course will provide the students an idea of basics of LED bulbs and practical sessions on assembling and service of LED bulbs.

### SYLLABUS

#### MODULE I

10 hours

Diodes- basic concepts, Biasing-forward bias and reverse bias, Introduction to LEDs, Semiconductor LEDs- How do they Work, LED's basic theory, LED Voltage and current, Advantages and disadvantages of LED

#### MODULE II

10hours

Multicolour LEDs, White LED, Physics of White LED, White LED no heat, Blue LED- History of Revolutions, LEDs Lighting and Potential for energy savings, Applications of LEDs- Power indicator, seven segment display, why LED lights so good, Organic LEDs

#### MODULE III – Practical Session

10 hours

How to assemble LEDbulbs, Discussion of the circuits , Fabrication of the LED bulbs

#### Text book for study

1. Principles of Electronics- V.K Metha- S . Chand Publication
2. Principles and Applications of Organic Light Emitting Diodes (OLEDs) Tejjo Kalyani, Hendrik Swart and S.J. Dhoble-Wiley Publication
3. Understanding LED Illumination – M. Nisa Khan
4. Integrated Electronics- Jacob Millman, Christos Halkias ,Chetan D. Parikh- second edition

[contact@mtcc.ac.in](mailto:contact@mtcc.ac.in)

# Andhra Christian College, Guntur

## Department of Physics

List of Students Attended for the Add-on Course

Date: 01-02-2018 to 18-08-2018

Class: I II, and III B. Sc (M. P.C. and M. P. Cs)

S. No.	Class No	Name of the Students	Class	Signature
1	601	V. Prakash	I <sup>st</sup> B.Sc	V. Prakash
2	621	R. Ravi Kiran	I <sup>st</sup> B.Sc	R. Ravi Kiran
3	634	D. Yakobu	I <sup>st</sup> B.Sc	D. Yakobu
4	639	E. Mohan Krishna	I <sup>st</sup> B.Sc	E. Mohan Krishna
5	645	L. Jeeva Mani	I <sup>st</sup> B.Sc	L. Jeeva Mani
6	1400	B. Charan Varma	I <sup>st</sup> B.Sc	B. Charan Varma
7	1409	N. Venkateswarlu	I <sup>st</sup> B.Sc	N. Venkateswarlu
8	601	T. Divya Bharathi	II <sup>nd</sup> B.Sc	T. Divya Bharathi
9	602	M. Anusha	II <sup>nd</sup> B.Sc	M. Anusha
10	605	K. Sai babu	II <sup>nd</sup> B.Sc	K. Sai babu
11	628	P. Joji Babu	II <sup>nd</sup> B.Sc	P. Joji Babu
12	643	T. Mani Raj	II <sup>nd</sup> B.Sc	T. Mani Raj
13	602	K. Bangaru Rami	III <sup>rd</sup> B.Sc	K. Bangaru Rami
14	605	E. Thivi Kram	III <sup>rd</sup> B.Sc	E. Thivi Kram
15	619	R. Vamsi	III <sup>rd</sup> B.Sc	R. Vamsi
16	626	B. Mahesh Babu	III <sup>rd</sup> B.Sc	B. Mahesh Babu
17	631	D. Raj Meena	III <sup>rd</sup> B.Sc	D. Raj Meena
18	636	D. Babu Raj	III <sup>rd</sup> B.Sc	D. Babu Raj
19	640	D. Nagababu	III <sup>rd</sup> B.Sc	D. Nagababu
20	642	P. Arun Kumar	III <sup>rd</sup> B.Sc	P. Arun Kumar

*K. J. Shree*  
 Department of Physics  
 A.C. College, Guntur.

# Andhra Christian college

Guntur

ADD-ON CERTIFICATE COURSE

DEPARTMENT OF PHYSICS

## ATTENDANCE REPORT

Academic year: 2018-19

Timings: 3:00 PM to 5:00 PM Total hours:30 hours

S.No	Class No	Name of the student	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	11 <sup>th</sup>	12 <sup>th</sup>	13 <sup>th</sup>	14 <sup>th</sup>	15 <sup>th</sup>
1 <sup>st</sup> B.Sc																	
1	614	V.Prakash	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	621	R.Ravi kiran	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	634	D.Yakobu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	639	E.Mohan krishna	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	645	L.Jeeva mani	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	1404	B.Charan varma	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	1409	N.Venkateswarlu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2 <sup>nd</sup> B.Sc																	
8	601	T.Divya Bharathi	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	604	M.Anusha	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	608	K.Saibabu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	629	P.Joji babu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	643	T.Mani Raj	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3 <sup>rd</sup> B.Sc																	
13	602	K.Bangaru Rani	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	615	E.Trivikram	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	619	R.Vamsi	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	626	B.Mahesh Babu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	631	D.Raj meena	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	636	D.Babu rao	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	640	D.Naga babu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	642	P. Arun Kumar	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

*S. Srinivas*  
 Department of Physics HOD  
 A.C. College, Guntur.

*M. C. Kumar*  
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DEPARTMENT OF PHYSICS

Academic Year 2018-19

TOPIC - LIGHT EMITTING DIODE

Max Marks : 20 M

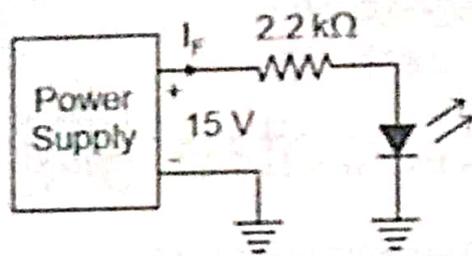
Time : 1 hour

Time:

Answer all Questions. Each question carries **ONE** marks

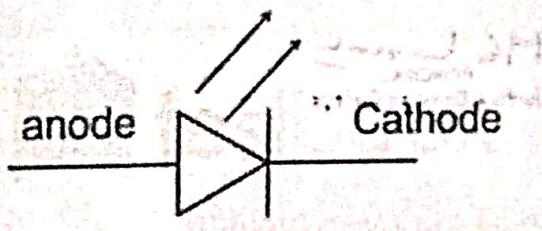
1. In LEDs, light is emitted when \_\_\_\_\_.
  - a. Electrons recombine with electrons
  - b. Electrons recombine with holes
  - c. Electrons do not recombine
  - d. None of the above
2. Which of the following produce the current when it absorbs photons?
  - a. Transducer
  - b. LED
  - c. Photodiode
  - d. LCD
3. LEDs work on the principle of \_\_\_\_\_.
  - a. Electromagnetic induction
  - b. Conduction
  - c. Electroluminescence
  - d. Induction
4. State true or false: High warm-up time is needed for LEDs.
  - a. TRUE
  - b. FALSE
5. In local dimming, LEDs are dimmed \_\_\_\_\_.
  - a. Together
  - b. Independently
6. Aluminium alloys are used to obtain \_\_\_\_\_ light.
  - a. Red
  - b. Orange
  - c. Yellow
  - d. All of the above

7. What is the current passing through the led in the following circuit, assuming it has a voltage drop of 2V?



- a. 5.91 mA  
b. 8.72 mA  
c. 3.72 mA  
d. 5.27 mA
8. A light-emitting diode(LED) converts:
- Optical signal into thermal energy
  - Thermal energy into electrical energy
  - Electrical current into optical signal
  - Sound energy into optical signal
9. What value of a series resistor is required to limit the current through an LED to 20 mA with a forward voltage drop of 2.0 V, when connected to a 10-V supply
- 600  $\Omega$
  - 200  $\Omega$
  - 800  $\Omega$
  - 400  $\Omega$
10. If the speed of light in air is represented by  $e$  and the speed in a medium is  $u$ , then the refractive index of the medium can be calculated using the formula \_\_\_\_\_.
- $u/e$
  - $e/u$
  - $e/(2.u)$
  - $(e-u)/e$
11. If a RED/ GREEN multi color LED is switched fast enough between two polarities, it will produce \_\_\_\_\_ colour.
- Green
  - Orange
  - Red
  - Yellow

12. Which of the following statements about LED is Incorrect?
- It needs small power for operation
  - It emits light
  - It uses materials like gallium and arsenide
  - It uses materials like silicon and germanium
13. Red (R), Green (G) and Blue (B) Light Emitting Diodes (LEDs) were fabricated using p-n junctions of three different inorganic semiconductors having different band-gaps. The built-in voltages of red, green and blue diodes are  $V_R$ ,  $V_G$  and  $V_B$ , respectively. Assume donor and acceptor doping to be the same ( $N_A$  and  $N_D$ , respectively) in the p and n sides of all the three diodes. Which one of the following relationships about the built-in voltages is TRUE?
- $V_R > V_G > V_B$
  - $V_R < V_G < V_B$
  - $V_R = V_G = V_B$
  - $V_R > V_G < V_B$
14. The basic material for fabrication of an LED is
- gallium arsenide
  - gallium arsenide phosphide
  - indium antimonide
  - indium antimonide phosphide
15. Which of the following semiconductor compound is not used in the construction of Light Emitting Diodes?
- GaAs
  - GaP
  - GaSe
  - GaN
16. Identify the diode for which the above symbol is used.



- Varactor diode
- Light emitting diode
- Photo diode
- Blocking diode

17. An LED has a rating of 2 V and 10 mA. If it is connected to a 6V battery, the minimum value of series resistance is
- 40  $\Omega$
  - 100  $\Omega$
  - 200  $\Omega$
  - 400  $\Omega$
18. The color of the emitted light from the P-N junction made of GaAsP is
- red or yellow.
  - far infrared.
  - near infrared.
  - ultraviolet.
19. RGB LED consists of \_\_\_\_\_ LED.
- Two red, one green and one blue
  - One red, two green and one brown
  - One red, one green and one blue
  - two red, two green and two blue
20. As compared to an LED, an LCD has the distinct advantage of
- Extremely low power consumption
  - Providing a silver display
  - Being extremely thin
  - Giving two types of displays

1-b, 2-c, 3-c, 4-b, 5-b, 6-d, 7-a, 8-c, 9-d, 10-b, 11-d, 12-d, 13-b, 14-a, 15-c, 16-b, 17-d, 18-a, 19-c, 20-a

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