To
The Principal,
Karnatak Arts, Science & Comm. College
Bidar

05 Dec.2019

Madam,

Sub: Permission to run a short term Certificate Course.

In view of the Renewable Energy lab establishment the stall at this department is of the opinion to run a short term certificate course on Renewable Energy Titled **"Basics of Solar Cell & Panels"**. This will be a 30hrs course with a maximum intake of 40 students.
For managing the course & related expenses, kindly permit me to collect Rs.100/- per student. The details of the amount collected will be submitted to you.

Thanking You,

Yours Faithfully,

S.L.Kulkarni
HOD Physics

HEAD OF PHYSICS DEPT

Received Kalpana

PRINCIPAL
Karnatak [illegible] Comm. College
[illegible]

ಕರ್ನಾಟಕ ಕಲಾ, ವಿಜ್ಞಾನ ಹಾಗೂ ವಾಣಿಜ್ಯ ಮಹಾವಿದ್ಯಾಲಯ, ಬೀದರ
KARNATAK ARTS, SCIENCE & COMMERCE COLLEGE, BIDAR
Estd 1970
(Affiliated to Gulbarga University, Kalaburagi)
College with Potential for Excellence Status Awarded by UGC New Delhi
ISO 9001 : 2015

Golden Jubilee Celebration - 1970-2020

Karnatak Arts, Science & Commerce College : BIDAR
Dept. of Physics

# DEPARTMENT OF PHYSICS

## CERTIFICATE COURSE – I

## BASICS OF SOLAR CELL AND PANELS

| | | |
|---|---|---|
| Duration | : | 1 Semester |
| Batch-I | : | Jan 2021 to March 2021 |
| No. of Hours | : | 30 |
| Theory | : | 18hrs |
| Skill Component | : | 12hrs |
| Maximum Intake | : | 40 Students |
| Eligibility | : | UG Students (Regular) with Physics as Elective (Karnatak College Bidar) |
| Registration Fees | : | Rs. 100/- |

HOD, Physics

Principal

PRINCIPAL
Karnatak Arts Sci. & Com. College
BIDAR-585 401

1) Dr. Eknath. Halse
2) Dr. Rajendra Birodar
3) Shweta Patil
4) Devikarani.

E-mail : principalkascc@gmail.com
Fax : 08482-226503
Hyderabad Road, Karnataka State - 585401.
Fax : 08482-226503
Cell : 9343834635
Visit us @ www.kascc.in.net

Save Environment Save Earth

Karnatak Arts, Science & Commerce College BIDAR : Dept. of Physics

## DEPARTMENT OF PHYSICS

## CERTIFICATE COURSE – I
## BASICS SOLAR CELL & PANELS
## BOARD OF STUDIES

| | | |
|---|---|---|
| Chairman | : | **Dr.Kalpana.V. Deshpande**<br>Principal<br>Karnatak College Bidar |
| Co-Ordinator | : | **S.P Janwadkar**<br>Associate Professor ( Dept.of Physics) |
| Subject Tutor | : | 1. Shweta Patil<br>2. DevikaRani |
| External Members | : | 1. **Dr.Eknath Halse**<br>Gurunanak 1St Grade College,Bidar<br>2. **Dr.Rajendra.Biradar**<br>HOD Dept. of Electronics<br>Karnatak College Bidar |

**HOD**
**Physics**
HOD,
Dept. of Physics
Karnatak Arts Sci. &Com. College Bidar

**Principal**
Karnatak Arts Sci. & Com. Colle.

KARNATAK ARTS, SCIENCE & COMMERCE COLLEGE BIDAR
DEPARTMENT OF PHYSICS

Karnatak Arts, Science & Commerce College BIDAR Dept. of Physics

Date: 10/10/2019

A local BOS meeting is called in the department of physics to discuss about the start of two certificate courses 1.Basics of solar cell & panels & 2.Harnessing wind energy today at 5pm.

HOD Physics proposed to start two certificate courses as add on courses & the draft syllabus for them.

After the discussion the draft syllabus was approved with minor corrections the entire structure of the course and the examination pattern was finalized in the meeting.

HOD
Physics

Principal
PRINCIPAL
Karnatak Arts, Sci. & Com. College
BIDAR-585 401

Members Present

1. Course Co-Ordinator : S.P.Janwadkar

2. Subject Tutors : 1.Shweta Patil
2. Devikarani

3. External Members :
1. Dr.Eknath Halse
Gurunanak First Grade College Bidar
2. Dr.Rajendra.Biradar
HOD Electronics
Karnatak College Bidar

KARNATAK ARTS, SCIENCE & COMMERCE COLLEGE BIDAR
DEPARTMENT OF PHYSICS
CERTIFICATE COURSE I & II
PREAMBLE

Energy plays a vital role in the human life. We cannot even imagine our life without energy. But the sources of conventional energies are limited ones, and are going to get exhausted shortly. Hence there is an immense need to shift towards non-conventional evergreen energy resources. In order to introduce our students about harnessing such energies, need was felt to start a certificate course.

The available non - conventional energy resources at our local area were recognized as solar energy and wind energy.

Hence it is decided to continue the two certificate courses as add-on courses

**(1) Basics Solar cell & Panels**
**(2) Harnessing Wind Energy**

A local BOS is constituted to monitor the running of these courses at the institutional level comprising of following members

| | | |
|---|---|---|
| Chairman | : | **Dr.Kalpana.V. Deshpande**<br>Principal<br>Karnatak College Bidar |
| Co-Ordinator | : | **S.P Janwadkar**<br>Associate Professor ( Dept.of Physics) |
| Subject Tutor | : | 1. Shweta Patil<br>2. DevikaRani |
| External Members | : | 1. **Dr.Eknath Halse**<br>Gurunanak 1St Grade College,Bidar<br>2. **Dr.Rajendra.Biradar**<br>HOD Dept. of Electronics<br>Karnatak College Bidar |

The course content is decided to be completed during a span of two months and after its completion the students are expected to acquire knowledge about harnessing these non-conventional energies. Also should acquire the practical knowledge of assembling solar panels / erecting wind turbine to generate the electrical energy.

**HOD**
**Physics**
HOD
Dept. of Physics
Karnatak Arts Sci. &Com. College Bidar

**Principal**
PRINCIPAL
Karnatak Arts Sci. & Com. Colle...
BIDAR-585 401

Karnatak Arts, Science & Commerce College Dept. of Physics BIDAR

DEPARTMENT OF PHYSICS

## CERTIFICATE COURSE – I
## BASICS OF SOLAR CELLS AND PANELS

**SYLLABUS**

**THEORY** 30hrs

18hrs

**Unit 1 : Renewable Energy:** Need for Renewable Energy, Generation & Consumption a World Scenario, India's Energy Consumption Brief Survey, Different Types of Renewable Energy. Merits & Demerits of Solar Energy. 4hrs

**Unit 2 : Solar Cell Fundamentals:** PN Junction Device, IV Characteristic, PV Characteristics, Open Circuit Voltage, Short Circuit Current, Fill Factor, Efficiency. 3hrs

**Unit 3 : Classification of Solar Cell:** Thickness of Active Material, Multi crystalline Silicon Solar Cell, Ga-As Solar Cell, Polymer Solar Cell, Recent Advancements. 5hrs

**Unit 4 : Solar Photo Voltaic Module:** PV Module Series & Parallel Connections, Number of Cells in Module, Module Power, Role of blocking Diode, Bypass Diode, Shading Effect, Tilting Effect. 6hrs

**PRACTICALS** 12hrs

1. To study the I-V characteristics of PV module with varying radiation.
2. To study the P-V characteristics of PV module with varying radiation.
3. To study the I-V characteristics of series combination of PV modules.
4. To study the P-V characteristics of parallel combination of PV modules.
5. Study of effect of variation in tilt angle of PV module.
6. Study of effect of shading on module output power.

HOD Dept. of Physics

Coordinator BOS

1) Dr. Eknath N. Hole

2) Dr. Rajendra Biradar

3) Shweta Patil

4) Pevikarani

Principal & Chairman BOS

PRINCIPAL Karnatak Arts Sci. & Com. College

KRE SOCIETY'S

Karnatak Arts Science and Commerce College, Bidar

Department of Physics

**Certificate course – Basics of Solar Cell and Panels**

## Outcomes

By the completion of this course students will:

1. Understand the basics of Renewable energy sources
2. Understand the need for Renewable energy sources
3. Understand the principles of extraction of energy from Solar PV System.
4. Understand the properties of solar energy resource, PV system operation and Component s pecifications.

HOD, Physics

H.O.D.
Dept. of Physics
Karnatak Arts Sci. & Com. College Bidar

## Department Of Physics

### NOTICE

Date:- 13/Dec/2019

All the degree students with physics as elective subject are here by informed that, the department of Physics is introducing two short term certificate courses. The details are as follows:

| Title | No. of Hrs | Registration fees |
|---|---|---|
| 1. Basics of Solar Cell & Panels | 30hrs | Rs.100/- |
| 2. Harnessing Wind Energy | 30hrs | Rs.100/- |

Students, who are willing to enroll, need to contact

1. Ms. Shweta Patil
2. Miss. Shruti Swami
3. Miss. Devikarani

**Note: The intake is limited to 40 Students**

HOD Physics
Head
Dept. of Physics
Karnatak Arts Sci. & Com. College Bidar

Principal
PRINCIPAL
Karnatak Arts Sci. & Com. College
BIDAR-585 401

KRE SOCIETY'S
KARNATAK ARTS, SCIENCE AND COMMERCE COLLEGE, BIDAR
DEPARTMENT OF PHYSICS
CERTIFICATE COURSE 2019-20

**NOTICE** Date 16-12-2019

All the Students who have enrolled for **"Basics of Solar cell and Panel's** are here by informed to attend the regular classes as per the time table mentioned.

Course Incharge

Principal
PRINCIPAL
Karnatak Arts Sci. & Com. College
BIDAR-585 401

KRE SOCIETY

# Karnatak Arts, Science and Commerce College, Bidar

## Department Of Physics

**Time Table**

**Certificate Course 2019-20**

**Basics of Solar Cell and Panels**

| Day/Time | 3pm to 5pm | Class |
|---|---|---|
| Friday | Group-I: 25 – PCM+PME | B.Sc V Sem |
| Saturday | Group-II: 15 – PCM+PME | B.Sc V Sem |

HOD, Physics

HOD,
Dept. of Physics
Karnatak Arts Sci. &Com. College Bidar

PRINCIPAL
Karnataka Arts Sci. & Com. Coll
BIDAR-585401

KRE SOCIETY'S

# KARNATAK ARTS, SCIENCE AND COMMERECE COLLEGE BIDAR

Affiliated to Gulbarga University

College with Potential for Excellence Status Awarded by UGC

## ADMISSION FORM

## 2019-2020

## CERTIFICATE COURSE


**COURSE: BASICS OF SOLAR CELL AND PANELS**

| | | |
|---|---|---|
| 01 | Name of the Student | Pooja B |
| 02 | Father's Name | Nagashetty |
| 03 | Date of Birth (DD/MM/YYYY | 02-03-2000 |
| 04 | Class with Combination | I B.Sc V Sem (PME) |
| 05 | Gender | Female |
| 06 | Blood Group | |
| 07 | Contact Number | 6363992110 |
| 08 | E- Mail ID | Poojamethre93@gmail.com |
| 09 | Address for correspondence | Vidyanagar colony, Bidar |

I abide with the rules and regulations of the course.

Signature of the Applicant

Reg. No.:

HOD

Dept. of Physics

Karnatak Arts Sci. &Com. College Bidar

PRINCIPAL

PRINCIPAL

Karnatak Arts Sci. & Com. Co...

BIDAR-585 401

Karnatak Arts Science & Commerce College Bidar

DEPARTMENT OF PHYSICS

CERTIFICATE COURSE – I

Basics of Solar Cell & Panels

2019 - 20

LIST OF STUDENTS

| Sl.No | Reg.No | Name of student | Phone No | E-mail Id | Amount |
|---|---|---|---|---|---|
| 01 | 91863064 | Pallavi Sangshetty | 9731836917 | Pallavimalkapure073@gmail.com | 100 |
| 02 | 9186992 | Sapna. N | 9480241861 | Sapnasiddapure123@gmail.com | 100 |
| 03 | 91862928 | Pooja. N | 6363992110 | Poojametre93@gmail.com | 100 |
| 04 | 91863048 | Shashikant. S | 9591254169 | Shashikantkanade9591@gmail.com | 100 |
| 05 | 91863057 | Praveen Reddy | 7022888067 | Praveenreddy0002@gmail.com | 100 |
| 06 | 91862930 | Pavitra swamy | 9741518063 | Pavitrabdr741@gmail.com | 100 |
| 07 | 91863063 | Ashwini. U. Reddy | 9663583853 | Eashuashu1014@gmail.com | 100 |
| 08 | 91863006 | Archana | 9535656588 | Archanahonna48@gmail.com | 100 |
| 09 | 91862916 | Renuka swamy | 6360064978 | Renukaswamy3451@gmail.com | 100 |
| 10 | 91862905 | Avan | 9740582069 | ujanikara@gmail.com | 100 |
| 11 | 91862923 | Shivani Jagdale | 7676746821 | shivani.shivani0022@gmail.com | 100 |
| 12 | 91862991 | Siddeshwari . B | 9611756996 | siddeshwari145@gmail.com | 100 |
| 13 | 91863021 | Lata . G | 6360288871 | latadoddi2000@gmail.com | 100 |
| 14 | 91862993 | Buddarath | 8431851314 | buddarath9632@gmail.com | 100 |
| 15 | 91862990 | Krishna. S | 6360217193 | krishnaskamble99@gmail.com | 100 |
| 16 | 91863086 | K.Deepika | 6362340051 | kd08108@gmail.com | 100 |
| 17 | 91862921 | Jyoti Vithal | 7353103071 | jyotimethre4@gmail.com | 100 |
| 18 | 91863018 | Pooja Mohanrao | 9008513808 | pooja.anura2000@gmail.com | 100 |
| 19 | 91862931 | Vikash.v | 6361060417 | vickychitte582@gmail.com | 100 |
| 20 | 91863002 | Korer Jagdish .S | 7019745988 | korerjagdish@gmail.com | 100 |
| 21 | 91862913 | Vishwanath | 9964123351 | krishnapatil7799@gmail.com | 100 |
| 22 | 91862906 | Divya Ramesh | 8710836803 | divyadarga32@gmail.com | 100 |
| 23 | 91862909 | Sital Tukaram | 8105706379 | barbhaisheetal@gmail.com | 100 |
| 24 | 91862901 | Supriya .V | 9380529822 | supriyamathapatiol@gmail.com | 100 |

HOD
Dept. of Physics
Karnatak Arts, Sci. &Com. College Bidar

Vice-Principal &
IQAC. Coordinator
Karnatak Arts, Science &
Commerce College Bidar

| | | | | | |
|---|---|---|---|---|---|
| 25 | 91863071 | Ayasha farheen | 7406154656 | ayeshafarheen18@gmail.com | 100 |
| 26 | 91863039 | Vaishnavi Hiremath | 6360988991 | ammuhiremath78@gmail.com | 100 |
| 27 | 91863074 | Bhavani .R | 6364164052 | bhavanikage@gmail.com | 100 |
| 28 | 91863019 | Lokesh .N | 9538543494 | lokeshmetre953@gmail.com | 100 |
| 29 | 91862929 | Nikhat khanum | 9901109140 | nikhatkhanum5@gmail.com | 100 |
| 30 | 91863038 | Akash Ashok | 9900439179 | abhilash786@gmail.com | 100 |
| 31 | 91862983 | Sangmesh Ashok | 9035522941 | sangameshp571@gmail.com | 100 |
| 32 | 91863020 | Dileep Maruti | 7026169269 | dileepkodge@gmail.com | 100 |
| 33 | 91862912 | Avinash Kashinath | 8296242941 | avinashmasure@gmail.com | 100 |
| 34 | 91862933 | Thomas Prabhu | 9742684986 | thomaskhelgi123@gmail.com | 100 |
| 35 | 91862894 | Deepika Baswaraj | 9886874153 | deepikabasavaraj2000@gmail.com | 100 |
| 36 | 91862947 | Priyanka Kashinath | 9148508690 | priyankakaji123@gmail.com | 100 |
| 37 | 91862945 | Shashikumar.s | 8147129291 | shashikumarshambhu@gmail.com | 100 |
| 38 | 91863058 | Nazreen | 7829298060 | nazreen9013@gmail.com | 100 |
| 39 | 91863077 | Varsharani swamy | 8861113662 | varsharaniswammy50@gmail.com | 100 |
| 40 | 91862924 | Lokesh shivajirao | 9535618813 | lokeshdhulgande@gmail.com | 100 |

HOD
Physics

HOD
Dept. of Physics
Karnatak Arts Sci. & Com. College BIDAR

Vice-Principal &
IQAC. Coordinator
Karnatak Arts Science &
Commerce College, Bidar

Principal
Karnatak Arts Sci. & Com. College
BIDAR-585 401

Basics of Solar cell & Panel's Theory

Practical

K.R.E. Society's

# Karnatak Arts, Science And Commerce College Bidar

## Students Attendance Register

For the Month of Dec. 2020

| Admission No. | Roll Number | Names | Date No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 73 | Bhavani R | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 74 | Lata Govindrao | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 94 | Nikhat Khanum | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 96 | Lokesh N | | 1 | 2 | 2 | 3 | 3 | 4 | 5 | 6 | 7 | 7 | 8 | 9 | 10 | 11 |
| | 98 | Deelip Maruti | | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | 99 | Akash Ashok | | 1 | 2 | 2 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 100 | Shashikumar S | | 0 | 1 | 2 | 3 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 102 | Supriya Veerbhadrayya | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 10 | 10 | 11 | 12 |
| | 103 | Varshavi Hiremath | | 1 | 2 | 3 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | 112 | Ayesha farheen | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 |
| | 118 | Varsharani Swamy | | 1 | 2 | 3 | 4 | 4 | 5 | 5 | 6 | 7 | 7 | 8 | 9 | 10 | 11 |
| | 120 | Sital Tukaram | | 1 | 2 | 3 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | 124 | Pallavi Sangshetty | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 126 | Divya Ramesh | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 133 | Avinash Kashinath | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | 147 | Thomas prabhu | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | 150 | Deepika Basavaraj | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 10 | 11 | 11 | 12 |
| | 154 | Priyanka Kashinath | | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 8 | 9 | 10 | 11 | 12 |
| | 157 | Nazreen Sultana | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 |
| | 166 | Shivani jagdale | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 167 | Pooja Methre | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 168 | Shashikant. S | | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | 169 | Lokesh Shivajirao | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 |
| | 170 | Jyoti Vithal | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | 171 | Sangmesh Ashok | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

Signature of Lecturer with Date

Signature of H.O.D.

R/m, Bidar

| 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 1 | 2 | 3 | 4 | 5 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 0 | 1 | 2 | 3 | 4 | 5 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |

R/m, Bidar

Theory

K.R.E.

# Karnatak Arts, Science And Commerce College Bidar

Society's

Practical

## Students Attendance Register

For the Month of Dec 2020

| Admission No. | Roll Number | Names | Date No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 173 | Krishna S | | 0 | 1 | 2 | 3 | 3 | 4 | 6 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1 | 2 | 2 | 3 | 4 | 5 | | | | | | | | |
| | 175 | Vishwanath V | | 0 | 1 | 2 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 9 | 10 | 10 | 11 | 1 | 2 | 2 | 3 | 4 | 5 | | | | | | | | |
| | 176 | Arun | | 0 | 1 | 2 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 177 | Siddeshwari | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 13 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 179 | Pavitra Swamy | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 14 | 13 | 14 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 180 | Ashwini U Reddy | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 13 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 181 | Archana | | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 182 | Kotri Jagdish S | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 13 | 14 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 183 | Praveen Reddy | | 1 | 1 | 2 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 184 | Renuka Swamy | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 13 | 14 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 185 | Pooja Mohanrao | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 10 | 11 | 12 | 13 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 186 | K. Deepika | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 12 | 13 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 187 | Vikash V | | 0 | 1 | 2 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 188 | Buddharath | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |
| | 189 | Sapna N | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | |

Signature of Lecturer with Date

Signature of H.O.D.

Dept. of Physics
B.Com. College Bidar

KRE SOCIETY'S

# KARNATAK ARTS, SCIENCE AND COMMERCE COLLEGE, BIDAR.

## DEPARTMENT OF PHYSICS

## Certificate Course 2019-20

**NOTICE** DATE: 27/03/2020

All the enrolled students of certificate courses titled "Basics of Solar Cell and Panels", are here by informed that, an exam on these courses will be conducted on 21st April 2020, From 3pm to 4pm.

HOD, Physics

HOD,
Dept. of Physics
Karnatak Arts Sci. &Com. College Bidar

Certificate
Course in charge

Vice–Principal &
IQAC. Coordinator
Karnatak Arts, Science &
Commerce College, Bidar

KRE SOCIETY'S

# KARNATAK ARTS SCIENCE AND COMMERCE COLLEGE BIDAR

## DEPARTMENT OF PHYSICS

**CERTIFICATE COURSE – I**

**2019 – 2020**

**Basics of Solar Cell & Panels**

**Students Exam Attendance**

| SL NO. | Roll No. | REG.NO. | NAME OF STUDENT | SIGN |
|---|---|---|---|---|
| 01 | 124 | 91863064 | Pallavi Sangshetty | Pallavi S |
| 02 | 189 | 91862992 | Sapna .N | Sapna. |
| 03 | 167 | 91862928 | Pooja Metre | Pooja M |
| 04 | 168 | 91863048 | Shashikant.S | Shashi |
| 05 | 183 | 91863057 | Praveen Reddy | Praveen Reddy |
| 06 | 179 | 91862930 | Pavitra Swamy | Pavitra. S |
| 07 | 180 | 91863063 | Ashwini.U.Reddy | Ashwini |
| 08 | 181 | 91863006 | Archana | Archana |
| 09 | 184 | 91862916 | Renuka Swamy | Rswamy |
| 10 | 176 | 91862905 | Avan | Avan. |
| 11 | 166 | 91862923 | Shivani Jagdale | Shivani Jagdale |
| 12 | 177 | 91862991 | Siddeshwari | Siddeshwari |
| 13 | 74 | 91863021 | Lata Govindrao | Lata |
| 14 | 188 | 91862993 | Buddharatn | Buddharath. |
| 15 | 173 | 91862990 | Krishna.S | Krishna |
| 16 | 186 | 91863086 | K.Deepika | Deepika |
| 17 | 170 | 91862921 | Jyoti Vithal | Jyoti |
| 18 | 185 | 91863018 | Pooja Mohanrao | pooja. |
| 19 | 187 | 91862931 | Vikash.V | Vikash |
| 20 | 182 | 91863002 | Korer Jagdish.S | Kjagadish |
| 21 | 175 | 91862913 | Vishwanath.V | Vishwanath V |
| 22 | 126 | 91862906 | Divya Ramesh | Divya |

| | | | | |
|---|---|---|---|---|
| 23 | 120 | 91862909 | Sital Tukaram | Sital |
| 24 | 102 | 91862901 | Supriya.V | |
| 25 | 112 | 91863071 | Ayeshafarheen | Ayesha |
| 26 | 103 | 91863039 | Vaishnavi Hiremath | Vaishnavi H |
| 27 | 73 | 91863074 | Bhavani.R | Bhavani |
| 28 | 96 | 91863019 | Lokesh.N | Lokesh |
| 29 | 94 | 91862929 | Nikhat Khanum | Nikhat Khanum. |
| 30 | 99 | 91863038 | Akash Ashok | Akash. |
| 31 | 171 | 91863983 | Sangmesh Ashok | Sangmesh |
| 32 | 98 | 91863020 | Dileep Maruti | Dileep |
| 33 | 133 | 91862912 | Avinash Kashinath | Avinash. |
| 34 | 147 | 91862933 | Thomas Prabhu | Thomas |
| 35 | 150 | 91862894 | Deepika Basavaraj | Deepika |
| 36 | 154 | 91862947 | Priyanka Kashinath | Priya |
| 37 | 100 | 91862945 | Shashikumar.s | Shashi |
| 38 | 157 | 91863058 | Nazreen sultana | Nazreen |
| 39 | 118 | 91863077 | Varsharani Swamy | Varsharani |
| 40 | 169 | 91862924 | Lokesh Shivajirao | Lokesh |

HOD
Physics

Principal

Dept. of Physics
Govt. Sci. & Com. College Bidar

Scanned with CamScanner

KBE SOCIETY'S

KARNATAK ARTS, SCIENCE, AND COMMERCE COLLEGE, BIDAR

DEPARTMENT OF PHYSICS

CERTIFICATE COURSE

BASICS OF SOLAR CELLS AND PANEL

21 April 2020

Name

Reg No,

Max Marks: 20

Time: 1 hour

I. Choose the Correct Answer

The angle made by the plane surface with the horizontal is known as

Latitude
Slope
Surface azimuth angle
Declination

Beam radiations are measured with

Anemometer
Pyrheliometer
Sunshine recorder
All of the above

Solar radiation flux is usually measured with the help of a

Anemometer
Pyranometer
Sunshine recorder
All of the above

Global radiation =

Direct radiation − Diffuse Radiation
Direct radiation + Diffuse Radiation
Direct radiation / Diffuse Radiation
Diffuse Radiation / Direct radiation

The following is (are) laws of black body radiation

Plank's law
Stefan-Boltzmann law
both (A) and (B)
None of the above

The Open circuit voltage of any storage cell depends upon

Vice-Principal &
IQAC. Coordinator
Karnatak Arts, Science &
Commerce College, Bidar

HOD
Dept. of Physics
Karnatak Arts, Sci. &Com. College Bidar

Its chemical constituents
On the strength of its electrolyte
Its temperature
All the above

Cells are connected in series to

Increase the voltage rating
Increase the current rating
Increase the life of the cell
None of the above

The ratio of the beam radiation flux falling on a tilted surface to that falling on a horizontal surface is called the

Radiation shape factor
Tilt factor
Slope
None of the above

What is total amount of solar energy received by earth and atmosphere?

$3.8 \times 10^{24}$ J/year
$9.2 \times 10^{24}$ J/year
$5.4 \times 10^{24}$ J/year
$2.1 \times 10^{24}$ J/year

II. Fill in the Blanks

The efficiency of various types of collectors _____ with _____ temperature.

increases, decreasing
decreases, increasing
remains same, increasing
increases, increasing

Insolation is less _____

when the sun is low
when the sun right above head
at night
at sun rise

Solar radiation received at any point of earth is called _____

Insolation
Beam Radiation
Diffuse Radiation
Infrared rays

The scattered solar radiation is called

Direct Radiation
Beam Radiation
Diffuse radiation
Infrared Radiation

Solar radiation which reaches the surface without scattering or absorbed is called _____

Beam Radiation
Infrared radiation
Ultraviolet radiation
Diffuse radiation

III. Answer the Followings.

1. In what form is solar energy is radiated from the sun?
2. What is the major element found in a Photovoltaic cell?
3. What is Solar Constant?
4. Define Zenith angle.
5. what is open circuit voltage and short circuit current?

Course Co-ordinator.

HOD
H. D.
Dept. of Physics
Karnatak Arts Sci. &Com. College Bida

Vice-Principal &
IQAC. Coordinator
Karnatak Arts, Science &
Commerce College, Bidar

Name :- Sangamesh Ashok
Reg. No :- 91862983


I] choose the correct Answer.

1. The angle made by the plane surface with the horizontal is known as
Ans :- B] Slope

2. Beam radiations are measured with
Ans :- B] Pyrheliometer

3. Solar radiation flux is usually measured with the help of a
Ans :- B] Pyranometer

4. Global radiation =
Ans :- B] Direct radiation + Diffuse radiation

6. The following is case) laws of black body radiation
Ans :- C] both (A) and (B)

7. The open circuit voltage of any storage cell depends up on
Ans :- D] All the above

8. Cells are connected in series to
Ans :- A] increase the voltage rating

Name :- Sangamesh Ashok
Reg. No :- 91862983

I] choose the correct Answer.

1. The angle made by the plane surface with the horizontal is known as
Ans :- B] Slope

2. Beam radiations are measured with
Ans :- B] Pyrheliometer.

3. Solar radiation flux is usually meas-ured with the help of a
Ans :- B] Pyranometer.

4. Global radiation =
Ans :- B] Direct radiation + Diffuse radiation

6. The following is (are) laws of black body radiation.
Ans :- C] both (A) and (B)

7. The open circuit voltage of any storage cell depends up on
Ans :- D] All the above

8. Cells are connected in series to
Ans :- A] increase the voltage rating

5. Solar radiation which reaches the surface without scattering or absorbed is called

Ans:- A) Beam radiation.

III) Answer the followings.

1. In what form is solar energy is radiated from the Sun?

Ans:- In the form of infrared radiation Solar energy is radiated from the Sun

2 what is the major element found in a photovoltaic cell?

Ans:- Silicon element

3. What is Solar Constant?

Ans:- A Solar constant is a measurement of the Solar electromagnetic radiation.

4. Define Zenith angle

Ans:- the Solar Zenith angle is the angle between the Zenith and the centre of the Sun's disc

# DEPARTMENT OF PHYSICS

## CERTIFICATE COURSE – I

## "BASICS OF SOLAR CELL & PANELS"

## 2019-2020

## MARKS LIST OF STUDENTS

| SL NO. | Roll No. | REG.NO. | NAME OF STUDENT | Max. Marks | Obtained Marks |
|---|---|---|---|---|---|
| 01 | 73 | 91863074 | Bhavani.R | 20 | 18 |
| 02 | 74 | 91863021 | Lata Govindrao | 20 | 18 |
| 03 | 94 | 91862929 | Nikhat Khanum | 20 | 20 |
| 04 | 96 | 91863019 | Lokesh.N | 20 | 15 |
| 05 | 98 | 91863020 | Dileep Maruti | 20 | 16 |
| 06 | 99 | 91863038 | Akash Ashok | 20 | 15 |
| 07 | 100 | 91862945 | Shashikumar.s | 20 | 14 |
| 08 | 102 | 91862901 | Supriya.V | 20 | 20 |
| 09 | 103 | 91863039 | Vaishnavi Hiremath | 20 | 18 |
| 10 | 112 | 91863071 | Ayeshafarheen | 20 | 19 |
| 11 | 118 | 91863077 | Varsharani Swamy | 20 | 18 |
| 12 | 120 | 91862909 | Sital Tukaram | 20 | 16 |
| 13 | 124 | 91863064 | Pallavi Sangshetty | 20 | 15 |
| 14 | 126 | 91862906 | Divya Ramesh | 20 | 17 |
| 15 | 133 | 91862912 | Avinash Kashinath | 20 | 20 |
| 16 | 147 | 91862933 | Thomas Prabhu | 20 | 14 |
| 17 | 150 | 91862894 | Deepika Basavaraj | 20 | 16 |
| 18 | 154 | 91862947 | Priyanka Kashinath | 20 | 16 |
| 19 | 157 | 91863058 | Nazreen sultana | 20 | 20 |
| 20 | 166 | 91862923 | Shivani Jagdale | 20 | 20 |
| 21 | 167 | 91862928 | Pooja Metre | 20 | 19 |
| 22 | 168 | 91863048 | Shashikant.S | 20 | 18 |
| 23 | 169 | 91862924 | Lokesh Shivajirao | 20 | 18 |
| 24 | 170 | 91862921 | Jyoti Vithal | 20 | 16 |
| 25 | 171 | 91863983 | Sangmesh Ashok | 20 | 20 |
| 26 | 173 | 91862990 | Krishna.S | 20 | 17 |
| 27 | 175 | 91862913 | Vishwanath.V | 20 | 20 |
| 28 | 176 | 91862905 | Avan | 20 | 18 |
| 29 | 177 | 91862991 | Siddeshwari | 20 | 19 |

Dept. of Physics
Karnatak Arts, Sci. & Com. College Bidar

Vice-Principal &
IQAC Coordinator
Karnatak Arts, Science &
Commerce College, Bidar

| 30 | 179 | 91862930 | Pavitra Swamy | 20 | 17 |
|---|---|---|---|---|---|
| 31 | 180 | 91863063 | Ashwini.U.Reddy | 20 | 16 |
| 32 | 181 | 91863006 | Archana | 20 | 16 |
| 33 | 182 | 91863002 | Korer Jagdish.S | 20 | 17 |
| 34 | 183 | 91863057 | Praveen Reddy | 20 | 18 |
| 35 | 184 | 91862916 | Renuka Swamy | 20 | 16 |
| 36 | 185 | 91863018 | Pooja Mohanrao | 20 | 20 |
| 37 | 186 | 91863086 | K.Deepika | 20 | 18 |
| 38 | 187 | 91862931 | Vikash.V | 20 | 15 |
| 39 | 188 | 91862993 | Buddharatn | 20 | 20 |
| 40 | 189 | 91862992 | Sapna .N | 20 | 18 |
| 41 | 190 | 9194302 | Bheemrao | 20 | 20 |
| 42 | 191 | 91863122 | Rahul Rajkumar | 20 | 17 |
| 43 | 192 | 91863055 | Shruti sharadchandra | 20 | 18 |
| 44 | 193 | 91863056 | Aishwarya | 20 | 18 |
| 45 | 194 | 1863052 | Kiran sharanappa | 20 | 17 |

HOD
Physics

Principal
Karnataka Arts Sci. & Com. College
BIDAR-585401

Scanned with CamScanner

**KRE SOCIETY'S**
**Karnatak Arts Science and Commerce College, Bidar**
**Department of Physics**
**Conclusion Feedback Form for Certificate Course**
**Basics Solar Cell and Panels**
**2019-2020**

Karnatak Arts, Science & Commerce College : BIDAR
Dept. of Physics

**73** Out of **186** students felt that this Certificate Course is Extremely Good

**82** Out of **186** students felt that this Certificate Course is Good

**30** Out of **186** students felt that this Certificate Course is Quiet Good

**01** Out of **186** students felt that this Certificate Course is Poor

From the above observation we conclude that the conduct of certificate course for **Basics Solar Cell & Panels** is successful.

**Course Coordinator**

**HOD, Physics**
HOD;
Dept. of Physics
Karnatak Arts Sci. &Com. College Bidar

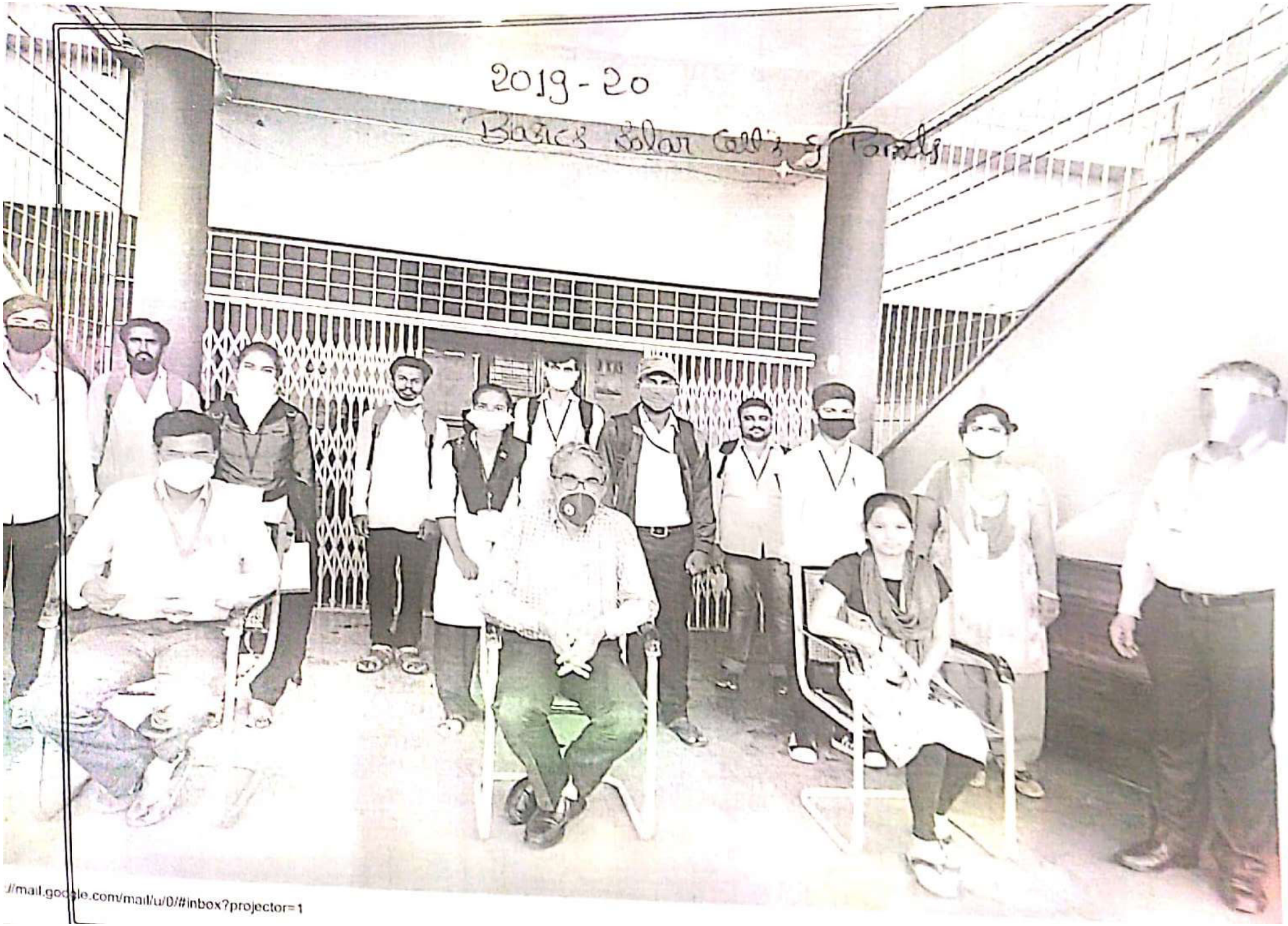
Basics Solar Cell & Panels

2019-20

**Certificate Course-I**



Doing Practicals Lab



KRE SOCIETY'S

KARNATAK ARTS SCIENCE AND COMMERCE COLLEGE BIDAR

DEPARTMENT OF PHYSICS

Certificate Course – Basics of Solar Cell & Panels

**Report**

2019-2020

The department has introduced one new short term, self financed certificate course of 30 hrs duration, during the year 2019- 2020, titled "Basics of Solar Cell & Panels"

**I. Course title : Basics of Solar Cell & Panels**
**Duration : 30hrs**
**Enrolled students : 40**

**Methodology** : The introduction of B.Voc course in Renewable Energy & corresponding lab, Installation of **45kW Roof Top Solar Plant** in the college premises made us to start this certificate course. To complete the theory part we utilized the beginning period of the semester when practical classes are about to start. As skill component part of this course 6 experiments are demonstrated batch wise. All the participants are given a booklet containing related theory & experimental details.

Conclusion: Students show good interest in both the certificate courses and express their opinion about these courses by giving feedback.

HOD

HOD
Dept. of Physics
Karnatak Arts, Sci. & Comm College, Bidar

PRINCIPAL

PRINCIPAL
Karnatak Arts Sci. & Com. College
BIDAR-585 401

RENEWABLE ENERGY

K.R.E. SOCIETY BIDAR

A NAAC

KRE SOCIETY'S

# KARNATAK ARTS, SCIENCE AND COMMERCE COLLEGE, BIDAR

## DEPARTMENT OF PHYSICS

**2019 – 2020**

## CERTIFICATE

This is to certify that Kumar/Kumari.....

with Reg. No.....of class B. Sc VI / IV / II sem. has successfully completed the short term course titled **"BASICS OF SOLAR CELL AND PANELS"** during the year 2019-2020.

**Sri. S.L.Kulkarni**
**Head, Dept. of Physics**

**Dr. Kalpana Deshpande**
**Principal**

**Dr. Basvaraj Patil, Ashoor**
**President, KRES**

*"Parvavarano Rakshati Rakshit Ha"*