

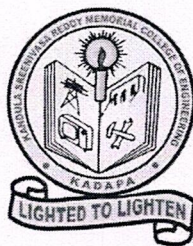
**KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING
(AUTONOMOUS)**

KADAPA-516003. AP

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(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF HUMANITIES & SCIENCES



VALUE ADDED COURSE

ON

“SOLID STATE PHYSICS”

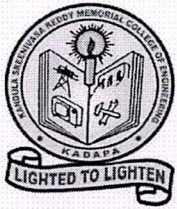
Resource Persons: Mr. D.Mallikarjuna Reddy, Assistant Professor, Dept. of H&S, KSRMCE

Mr. Y.Ramana Reddy, Assistant Professor, Dept. of H&S, KSRMCE

Dr.R.Joyce stella, Assistant Professor, Dept. of H&S, KSRMCE

Course Coordinator: Mr.D.Mallikarjuna Reddy, Assistant Professor, Dept. of H&S, KSRMCE

Duration: 21/11/2022 to 30/12/2022

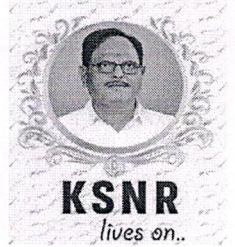


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Lr./KSRMCE/H&S/2022-23/

Date: 16-11-2022

To

The principal,
KSRMCE,
Kadapa.

Respected Sir,

Sub: Permission to Conduct Value added Course on "SOLID STATE PHYSICS"

21/11/2022 to 30/12/2022-Req- Reg.

The Department of Humanities & sciences is planning to offer a Value Added Course on "SOLID STATE PHYSICS" to B.Tech. students. The course will be conducted from **21/11/2022 to 30/12/2022**. In this regard, I kindly request you to grant permission to conduct Value Added Course.

Thanking you sir,

*Forwarded to
Principal Sir
Dy. Prof. H&S.*

Yours faithfully

(D.Mallikarjuna Reddy, Asst. Professor in H&S Department)

*Permitted
U.S.S. mm/g
17/11/2022*



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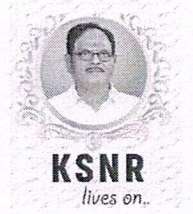


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Cr./KSRMCE/H&S/2022-23/

Date: 17/11/2022

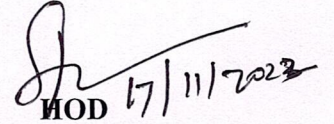
Circular

The Department of Humanities and Sciences is offering a Value Added Course on "SOLID STATE PHYSICS" from **21/11/2022 to 30/12/2022** to B.Tech students. In this regard, interested students are requested to register their names for the Value Added Course with Course Coordinator.

For further information contact Course Coordinator.

Course Coordinator: Mr. D.Mallikarjuna Reddy, Asst.professor, Dept. of H&S.-KSRMCE.

Contact No: 9490406646


HOD 17/11/2022

Dr. I. SREEVANI M.Sc., Ph.D.
Professor & HOD
Dept. of Humanities & sciences
K.S.R.M. College of Engineering,
KADAPA Dist.

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Date:

DEPARTMENT OF HUMANITIES AND SCIENCES

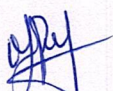
REGISTRATION FORM

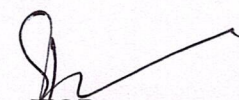
Value Added Course

On

“Solid State Physics” From 21/11/2022 to 30/12/2022

| S.No | Full Name | Roll Number | Branch | Semester | Signature |
|------|-----------|-------------|--------|----------|-----------|
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Coordinator:


HOD
Dr. I. SREEVANI M.Sc., Ph.D.
Professor & HOD
Dept.of Humanities & sciences
K.S.R.M. College of Engineering,
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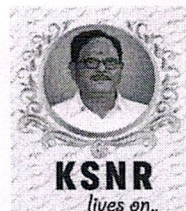


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Date: 19/11/2022

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REGISTRATION FORM

Value Added Course

On

“Solid State Physics” From 21/11/2022 to 30/12/2022

| S.No | Full Name | Roll Number | Branch | Semester | Signature |
|------|------------------------|-------------|--------|----------|-----------------|
| 1 | A. Shashidhar Reddy | 229Y1A0461 | ECE | I | A. Shashi |
| 2 | G. Sudha Dani | 229Y1A0462 | ECE | I | G. Sudha |
| 3 | G. Bindu sree | 229Y1A0465 | ECE | I | G. Bindu |
| 4 | G. Mahalakshmi | 229Y1A0466 | ECE | I | G. Mahalakshmi |
| 5 | G. Kusuma | 229Y1A0467 | ECE | I | G. Kusuma |
| 6 | G. S. Sameer | 229Y1A0468 | ECE | I | G. S. Sameer |
| 7 | I. Madava Reddy | 229Y1A0469 | ECE | I | I. Madava Reddy |
| 8 | J. Kivan Kumar | 229Y1A0472 | ECE | I | J. Kivan |
| 9 | K. Naga Tejaswini | 229Y1A0474 | ECE | I | K. Tejaswini |
| 10 | K. Hareesh Kumar | 229Y1A0476 | ECE | I | K. Hareesh |
| 11 | K. Mahendra | 229Y1A0477 | ECE | I | K. Mahendra |
| 12 | K. Gangireddy | 229Y1A0478 | ECE | I | K. Gangireddy |
| 13 | K. Thorikabata Raju | 229Y1A0479 | ECE | I | K. Raju |
| 14 | K. Bhudevi | 229Y1A0482 | ECE | I | K. Bhudevi |
| 15 | K. Imanisha | 229Y1A0484 | ECE | I | K. Imanisha |
| 16 | K. Borna chandra Reddy | 229Y1A0485 | ECE | I | K. Borna |
| 17 | K. Vishnu Varadhan | 229Y1A0486 | ECE | I | K. Vishnu |
| 18 | K. Byula | 229Y1A0489 | ECE | I | K. Byula |
| 19 | K. Linganna | 229Y1A0490 | ECE | I | K. Linganna |



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|-----|-------------------------|------------|---------|---|-------------------------|
| 20. | L. Prasanth | 229Y1A0491 | ECE | I | L. Prasanth |
| 21 | L. Sai prakash | 229Y1A0492 | ECE | I | L. Sai prakash |
| 22 | M. Aravind | 229Y1A0494 | ECE | I | M. Aravind |
| 23 | M. Gnaneswar | 229Y1A0499 | ECE | I | M. Gnaneswar |
| 24 | M. Srihitha | 229Y1A04A0 | ECE | I | M. Srihitha |
| 25 | M. Indu Priya | 229Y1A04A3 | ECE | I | M. Indu Priya |
| 26 | M. Harshitha | 229Y1A04A4 | ECE | I | M. Harshitha |
| 27 | M. Praveen | 229Y1A04A6 | ECE | I | M. Praveen |
| 28. | N. Uedhu | 229Y1A04A7 | ECE | I | N. Uedhu |
| 29 | P. Sai Prasanna Lakshmi | 229Y1A04B2 | ECE | I | P. Sai Prasanna Lakshmi |
| 30 | N. Lingeswar Reddy | 229Y1A04B0 | ECE | I | N. Lingeswar Reddy |
| 31 | P. Nagesimhulu | 229Y1A04B3 | ECE | I | P. Nagesimhulu |
| 32 | P. Pavithra | 229Y1A04B4 | ECE | I | P. Pavithra |
| 33 | P. Vyshnavi | 229Y1A04B5 | ECE | I | P. Vyshnavi |
| 34 | P. Jagannathan Reddy | 229Y1A04B6 | ECE | I | P. Jagannathan Reddy |
| 35 | A. Malliswari | 229Y1A0203 | ECE | I | A. Malliswari |
| 36 | B. Rani | 229Y1A0210 | ECE | I | B. Rani |
| 37 | C. Pragathi | 229Y1A0212 | ECE | I | C. Pragathi |
| 38 | D. Gayathri | 229Y1A0216 | ECE | I | D. Gayathri |
| 39 | G. Maheswari | 229Y1A0217 | ECE | I | G. Maheswari |
| 40 | K. Sudhakranti | 229Y1A0223 | ECE | I | K. Sudhakranti |
| 41 | R. Mukundam Naidu | 229Y1A0239 | ECE | I | R. Mukundam Naidu |
| 42 | M. Swathi | 229Y1A0231 | ECE | I | M. Swathi |
| 43 | S. Vyshnavi | 229Y1A0250 | ECE | I | S. Vyshnavi |
| 44 | P. Harshitha | 229Y1A0416 | ECE | I | P. Harshitha |
| 45 | P. Tejaswini | 229Y1A0411 | ECE | I | P. Teja |
| 46 | T. Pavan Kumar | 229Y1A0256 | ECE | I | T. Pavan |
| 47 | A. Usha Kiran Reddy | 229Y1A0406 | ECE | I | A. Usha |
| 48 | A. Haksheer Sathyan | 229Y1A0407 | ECE | I | A. Haksheer |
| 49 | B. Kesava | 229Y1A0412 | ECE | I | B. Kesava |
| 50 | B. Chitli | 229Y1A0417 | ECE | I | B. Chitli |
| 51 | S. Roopa | 229Y1A0409 | ECE - C | I | S. Roopa |
| 52 | R. Siva Kumari | 229Y1A0403 | ECE - C | I | R. Siva Kumari |
| 53 | S. Sadvika | 229Y1A0403 | ECE | I | S. Sadvika |



Syllabus of Value Added Course

Course Name: SOLID STATE PHYSICS

COURSE OBJECTIVES:

1. To enlighten the periodic arrangement of atoms in crystals.
2. To give an impetus on the subtle mechanism of superconductors using the concept of BCS theory and their fascinating applications.
3. To enlighten the concepts of Quantum Mechanics and to provide fundamentals of de-Broglie waves, quantum mechanical wave equation and its applications, the importance of free electron theory.
4. To explain the significant concepts of magnetic materials that leads to potential applications in the emerging micro devices.
5. To introduce various co-ordinate system and review of Maxwell's equations.

COURSE OUTCOMES:

1. **Classify** various crystal systems.
2. **Elaborate** the physical properties exhibited by materials through the understanding of properties of semiconductors and superconductors.
3. **Interpret** the concepts of classical and quantum free electron theories.
4. **Understands** the response of magnetic materials to the applied magnetic fields.
5. **Solve** the numerical based on the various concepts of electromagnetic field theory.

UNIT - I

CRYSTALLOGRAPHY

Introduction – Space lattice –Unit cell – Lattice parameters –Bravias lattice –Crystal systems – Packing fractions of SC, BCC and FCC - Directions and planes in crystals – Miller indices – Inter planar spacing in cubic crystals.

UNIT - II

SUPERCONDUCTIVITY

Introduction – Meissner effect - Properties of superconductors- Penetration Depth-Flux Quantization- Differences between Type -I and type- II superconductors- ac and dc Josephson effects -BCS theory (qualitative) –Applications of superconductors.

UNIT – III

FREE ELECTRON THEORY

Classical free electron theory (Merits and demerits only) – Quantum free electron theory – Equation for electrical conductivity based on quantum free electron theory – Fermi-Dirac distribution – Density of states – Fermi energy.

UNIT – IV

MAGNETIC MATERIALS

Magnetic dipole moment - Magnetic moments -- Magnetic permeability and susceptibility - Origin of magnetic moments-Hysteresis – Soft and Hard magnetic materials – Classification of Magnetic materials-Applications of Magnetic materials.

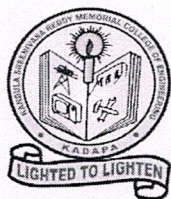
UNIT - V

ELECTROMAGNETIC THEORY

Divergence and Curl of Electric and Magnetic Fields- Gauss' theorem for divergence and Stokes' theorem for curl- Maxwell's Equations (Quantitative)- Electromagnetic wave propagation (non-conducting medium).

Reference Books:

1. Engineering Physics – Dr. M.N. Avadhanulu & Dr. P.G. Kshirsagar, S. Chand and Company
2. Engineering Physics – B.K. Pandey and S. Chaturvedi, Cengage Learning.
4. Engineering Physics – Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018
4. Engineering Physics – K. Thyagarajan, McGraw Hill Publishers
5. Engineering Physics - Sanjay D. Jain, D. Sahasrambudhe and Girish, University Press



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SCHEDULE

Department of humanities and sciences

Value Added Course

On

“Solid State Physics” From 21/11/2022 to 30/12/2022



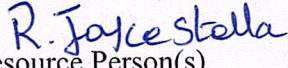
| Date | Timing | Resource Person | Topic to be covered |
|------------|-------------------|-------------------|---|
| 21-11-2022 | 4.00 pm – 5.00 pm | Dr.R.Joyce stella | Unit-1: CRYSTALLOGRAPHY - Introduction – Space lattice –Unit cell – Lattice parameters |
| 22-11-2022 | 4.00 pm – 5.00 pm | Dr.R.Joyce stella | Bravias lattice, |
| 23-11-2022 | 4.00 pm – 5.00 pm | Dr.R.Joyce stella | Crystal systems |
| 24-11-2022 | 4.00 pm – 5.00 pm | Dr.R.Joyce stella | Packing fractions of SC, BCC and FCC |
| 25-11-2022 | 4.00 pm – 5.00 pm | Dr.R.Joyce stella | Directions and planes in crystals |
| 26-11-2022 | 1.00 pm – 4.00 pm | Dr.R.Joyce stella | Miller indices, Inter planar spacing in cubic crystals |
| 28-11-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Unit-2: Introduction – Meissner effect - Properties of superconductors- |
| 29-11-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Penetration depth-Flux Quantization |

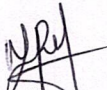



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| 30-11-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Diifferences between Type -I and type- II superconductors |
| 01-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | ac and dc Josephson effects |
| 02-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | BCS theory (qualitative), Applications of superconductors. |
| 03-12-2022 | 1.00 pm – 4.00 pm | D.Mallikarjuna Reddy | Unit-3: Classical free electron theory (Merits and demerits only), Quantum free electron theory |
| 05-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Equation for electrical conductivity based on quantum free electron theory. |
| 06-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Fermi-Dirac distribution |
| 07-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Density of states |
| 08-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Fermi energy. |
| 09-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Unit-4: Basic definitions |
| 12-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Magnetic dipole moment - Magnetic moments, Magnetic permeability and susceptibility |
| 13-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Origin of magnetic moments |
| 14-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Hysteresis – Soft and Hard magnetic materials |
| 15-12-2022 | 4.00 pm – 5.00 pm | D.Mallikarjuna Reddy | Classification of Magnetic materials |
| | | D.Mallikarjuna Reddy | Applications of Magnetic materials |



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| 16-12-2022 | 4.00 pm – 5.00 pm | | |
| 26-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Unit-5: Basic definitions |
| 27-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Divergence and Curl of Electric and Magnetic Fields |
| 28-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Gauss' theorem for divergence and Stokes' theorem for curl |
| 29-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Maxwell's Equations (Quantitative) |
| 30-12-2022 | 4.00 pm – 5.00 pm | Y.Ramana Reddy | Electromagnetic wave propagation (Non-conducting medium). |

1. 
2. 
3. 
Resource Person(s)


Coordinator(s)


HOD
Dr. I. SREEVANI M.C. Ph.D.
Professor & HOD
Dept. of Humanities & sciences
K.S.R.M. College of Engineering
KADAPA Dist.



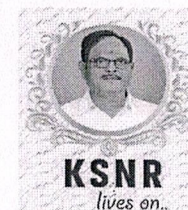
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Attendance sheet of Value-added Course on "Solid State Physics" From 21/11/2022 to 30/12/2022

| S.No | Roll No | Name of the student | 21/11 | 22/11 | 23/11 | 24/11 | 25/11 | 26/11 | 28/11 | 29/11 | 30/11 | 01/12 | 02/12 | 03/12 | 05/12 | 06/12 | 07/12 | 08/12 | 09/12 | 12/12 | 13/12 | 14/12 | 15/12 | 16/12 | 26/12 | 27/12 | 28/12 | 29/12 | 30/12 | | | | |
|------|------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|--|
| | | | 11/22 | 11/22 | 11/22 | 11/22 | 11/22 | 11/22 | 11/22 | 11/22 | 11/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | 12/22 | | | | |
| 1 | 22941A0406 | A. Usha Kiran Reddy | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | |
| 2 | 22941A0407 | A. Harkshay Suresh Reddy | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | | | | |
| 3 | 22941A0412 | B. Keshava | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | |
| 4 | 22941A0417 | B. Chitti | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | |
| 5 | 22941A0422 | B. Manisha | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | | | |
| 6 | 22941A0423 | B. Tagore | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | | | | |
| 7 | 22941A0425 | B. Venkata Sai | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | VS | | | | |
| 8 | 22941A0426 | B. Saikrishna | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | SK | | | | |
| 9 | 22941A0429 | B. Vidya Warshini | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | | | | |
| 10 | 22941A0436 | C. Harish Kumar Reddy | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | HK | | | | |
| 11 | 22941A0437 | C. Swarna Latha | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | | | | |
| 12 | 22941A0438 | C. Pravallika | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | | | | |
| 13 | 22941A0439 | C. Sravanthi | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | | | | |
| 14 | 22941A0457 | D. Vajeeda Tabassum | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | | | | |

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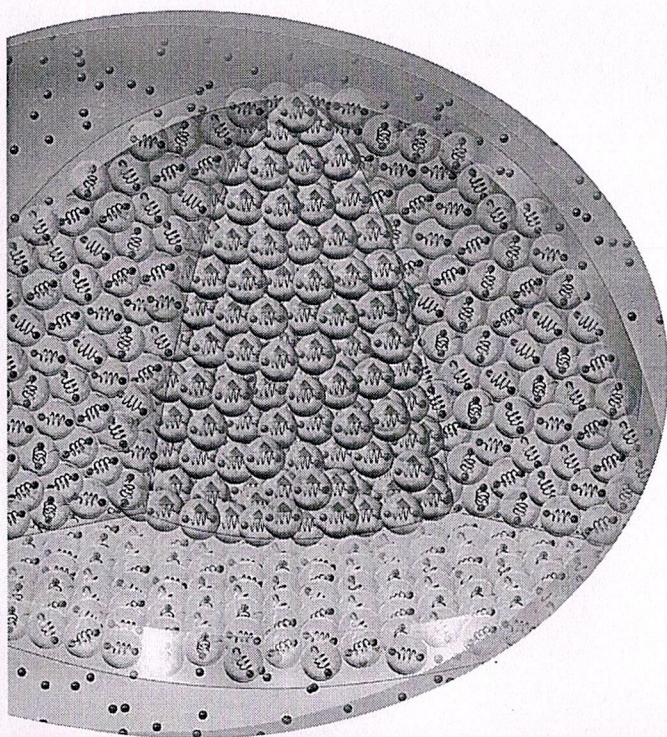
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Certificate Course on Solid State Physics



Resources Persons

Coordinator

Convenor

Humanities & sciences

CE 308

21st November 2022 to 30 December 2022

D.Mallikarjuna Reddy, Y.Ramana Reddy, &
Assistant Professor Assistant Professor

Dr.R. Joyce Stella, Assistant Professor

D.Mallikarjuna Reddy, Assistant Professor

Dr.I.Sreevani, Associate Professor & HOD Department of H & S

Dr. I. Sreevani
(Associate Professor & HOD)

Dr. V.S.S. Murthy
(Principal)

Dr. Kandula Chandra Obul Reddy
(MD, KGI)

Smt. K.Rajeswari
(Correspondent, Secretary, Treasurer)

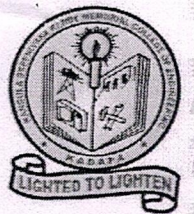
Sri K. Madan Mohan Reddy
(Vice - Chairman)

Sri K. Raja Mohan Reddy
(Chairman)

f i t y ksrnmceofficial

www.ksrmce.ac.in

8143731980, 8575697569



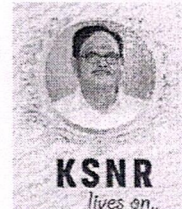
K.S.R.M. COLLEGE OF ENGINEERING

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Report of Value Added Course on "Solid State Physics" From 21/11/2022 to 30/12/2022

| | | |
|-------------------------|---|--|
| Target Group | : | B.Tech Students |
| Details of Participants | : | 68 Students |
| Co-coordinator(s) | : | Sri D.Mallikarjuna Reddy, Assistant Professor |
| Resource Person(s) | : | Mr. D.Mallikarjuna Reddy, Assistant Professor Mr. Y.Ramana Reddy, Assistant Professor Dr.R.Joyce stella, Assistant Professor |
| Organizing Department | : | Humanities & Sciences |
| Venue | : | CE -308 |

Description:

The Department of Humanities & Sciences conducted a Value-Added Course on "Solid State Physics" from 21st November 2022 to 30th December 2022. The course Resource Persons is Mr. D.Mallikarjuna Reddy, Assistant Professor, Mr. Y.Ramana Reddy, Assistant Professor and Dr.R.Joyce stella, Assistant Professor Department of Humanities & Sciences, KSRMCE.

The main aim of the course is to create awareness among students about this course of Solid-State Physics applied in various fields like Engineering and Industrial applications to conserve environment.

The branch which is studied about the geometry and structural properties of crystal substances is known as crystallography. **X-ray crystallography** is a tool used for identifying the atomic and molecular structure of a crystal.

The electrical resistivity of many metals and alloys drops suddenly to zero when the specimen is cooled to a sufficiently low temperature, often a temperature in the liquid helium range. This phenomenon is called superconductivity.

The electron theory is applicable to all solids both metals and non-metals. It explains the electrical, thermal and magnetic properties and also elastic, cohesive and repulsive forces in solids etc.

Magnetic materials are those substances which are affected by a magnet. They can be classified as diamagnetic, paramagnetic, ferromagnetic, antiferro magnetic and ferri magnetic materials. Ferromagnetic



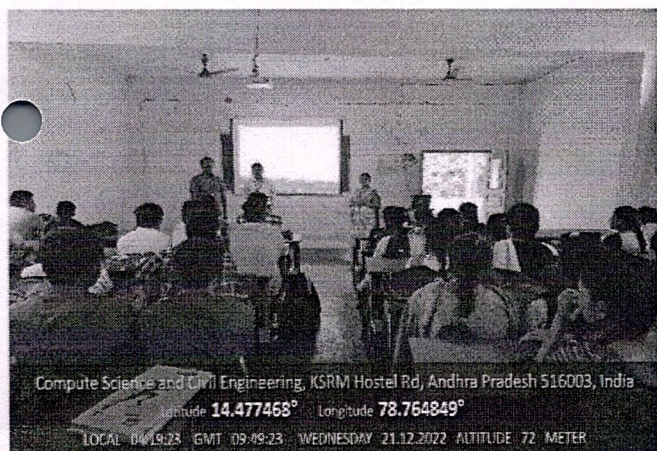
substances are strongly attracted by a magnet, paramagnetic substances are weakly attracted by a magnetic substance can be explained on the basis of electron theory.

The electromagnetic field possesses energy, mass and momentum and can be converted into other forms of matter and energy. A time varying electric field not only produces into other forms of matter and energy. A time varying electric field not only produces a time varying magnetic field in the region, but also in the surround region where the electric fields take place. Similarly, a changing magnetic field produces a changing electric field in the surrounding region.

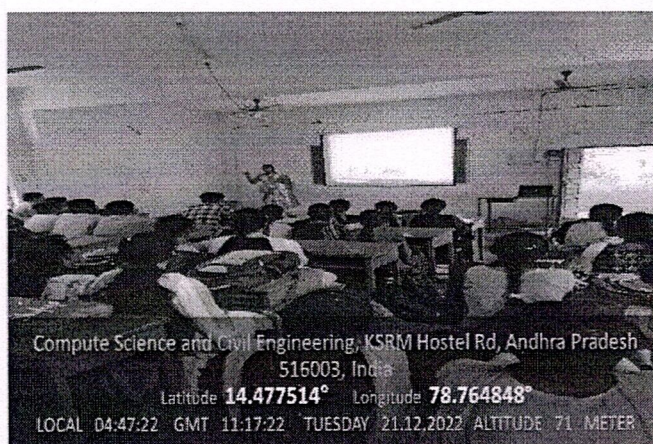
With this Certificate course students enhanced their knowledge in the area of Solid-State Physics.

Photos

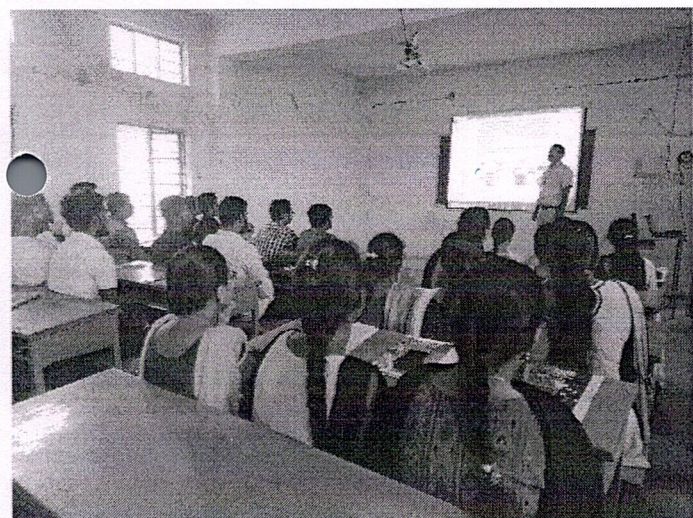
The pictures taken during the course are given below:



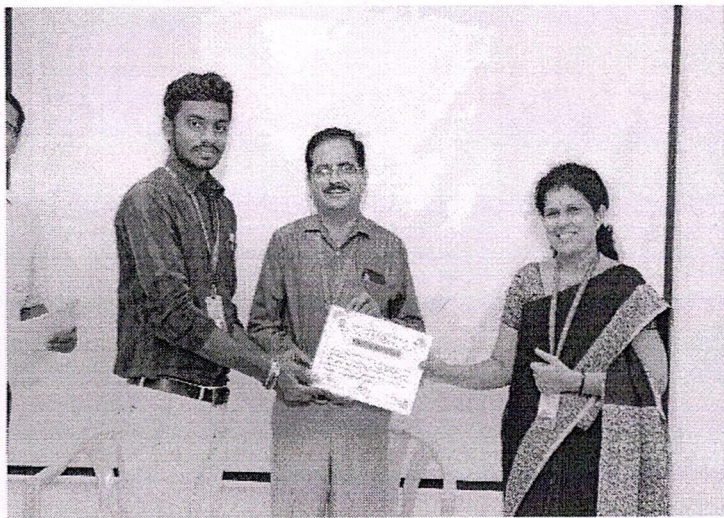
Resource Persons giving Keynote Address



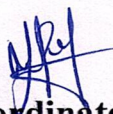
Dr.R.Joyce stella, Assistant Professor giving Lecture on X-ray diffraction

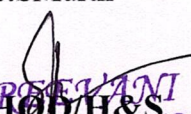



Participants Keenly Listening the Lecture



Certificates Distribution by the Principal Professor.V.S.SMurth


Coordinator


Dr. I. SREEVANI M.Sc., Ph.D
HOD/H&S
Dept. of Humanities & sciences
KSRM College of Engineering
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Certificate of Completion

This to certify that Mr/Mrs. _____ Bearing
the Roll Nuber _____ has Sucessfully Completed
Value Added Course on "SOLID STATE PHYSICS" from
21st November 2022 to 30th December 2022, Organized by
Department of H & S, KSRMCE, Kadapa.

Coordinator
Sri D.Mallikajuna Reddy,

HOD H & S
Dr. I Sreevani

Principal
Dr.V.S.S. Murthy



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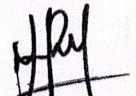
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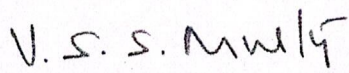
Certificate of Completion

This to certify that Mr/Mrs. G. Maheswari Bearing
the Roll Nuber 229Y1A0217 has Sucessfully Completed
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HOD H & S
Dr. I Sreevani


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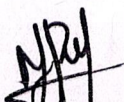
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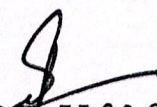


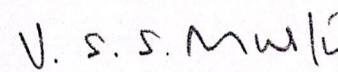
Certificate of Completion

This to certify that Mr/Mrs. U.KEERTHI Bearing
the Roll Nuber 229Y1A04G16 has Sucessfully Completed
Value Added Course on "SOLID STATE PHYSICS" from
21st November 2022 to 30th December 2022, Organized by
Department of H & S, KSRMCE, Kadapa.


Coordinator

Sri D. Mallikajuna Reddy,


HOD H & S
Dr. I Sreevani


Principal
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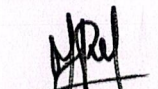
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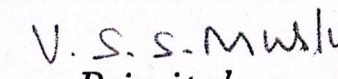
Certificate of Completion

This to certify that Mr/Mrs. G. Maha lakshmi Bearing
the Roll Nuber 229Y1A0466 has Sucessfully Completed
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21st November 2022 to 30th December 2022, Organized by
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Coordinator

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Dr. I Sreevani


Principal
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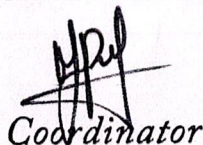
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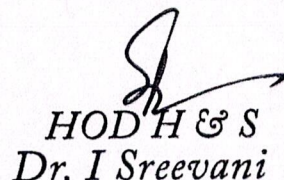
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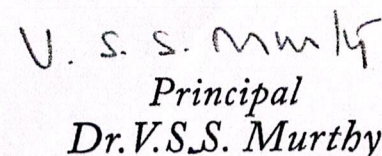
Certificate of Completion

This to certify that Mr/Mrs. N. Lingeswara Reddy Bearing
the Roll Nuber 229Y1A04B0 has Sucessfully Completed
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Coordinator

Sri D. Mallikajuna Reddy,


HOD H & S
Dr. I Sreevani


Principal
Dr. V.S.S. Murthy



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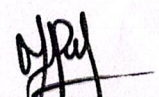
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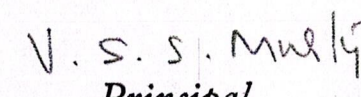
Certificate of Completion

This to certify that Mr/Mrs. P.Tejaswini Bearing
the Roll Nuber 229Y1A04D1 has Sucessfully Completed
Value Added Course on "SOLID STATE PHYSICS" from
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Department of H & S, KSRMCE, Kadapa.


Coordinator

Sri D.Mallikajuna Reddy,


HOD H & S
Dr. I Sreevani


Principal
Dr.V.S.S. Murthy

K.S.R.M College of Engineering (Autonomous), Kadapa

D.Mallikarjuna Reddy, Department of H&S(Physics)

* Required

1. Email *

2. Roll No *

3. Name *

4. Branch & Section *

5. Email address *

K.S.R.M College of Engineering (Autonomous), Kadapa

Feedback form on Value Added Course
"Solid State Physics" from 21/11/2022
to 30/12/2022

6. 1. How well the Course met your expectation *

Mark only one oval.

Poor

1 ☐

2 ☐

3 ☐

4 ☐

Excellent

7. 2. How well the concepts are presented *

Mark only one oval.

Low

1 ☐

2 ☐

3 ☐

4 ☐

High

8. 3. How well the all the sessions helped us to increasing your knowledge *

Mark only one oval.

☐ Excellent

☐ Good

☐ Average

☐ Poor

9. 4. How well the sessions is for interaction * *

Mark only one oval.

Poor

1

☐

2

☐

3

☐

4

☐

Excellent

10. 5. Do you want to participate like this courses in future *

Mark only one oval.

☐ Yes

☐ No

☐ Maybe

11. 6. Any suggestions

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| 2022-23 Solid State Physics VAC End Survey | | | | | | | | | | |
|--|-----------------------|------------|--------------------------|-----------------------------|-------|----------------------|--------------|--------|-------|------------------------------|
| Timestamp | Email Address | Roll No | Name | Branch & Source met concept | 3. | How well sessions is | 5. | Do you | 6. | Any suggestions |
| 12/30/2022 12:19 | 229y1a0471@ksrmce.ac. | 229Y1A0471 | Katika Waseem Akhthar | ECE-A sect | 3 | 3 | Good | 3 | Maybe | |
| 12/30/2022 22:29 | 229y1a0203@ksrmce.ac. | 229Y1A0203 | A. Malliswari reddy | Eee | 1 | 1 | Good | 2 | Yes | Yes |
| 12/30/2022 22:29 | 229y1a0210@ksrmce.ac. | 229Y1A0210 | B.Rani | EEE | 4 | 4 | Good | 4 | Yes | No suggestions |
| 12/30/2022 22:29 | 229y1a0212@ksrmce.ac. | 229Y1A0212 | C pragathi | EEE | 3 | 3 | Good | 3 | Maybe | |
| 12/30/2022 22:29 | 229y1a0216@ksrmce.ac. | 229Y1A0216 | D. Gayathri | EEE | 3 | 3 | Good | 3 | Maybe | |
| 12/30/2022 22:29 | 229y1a0217@ksrmce.ac. | 229Y1A0217 | G. Maheswari | EEE | 3 | 3 | Good | 3 | Maybe | Useful |
| 12/30/2022 22:29 | 229y1a0223@ksrmce.ac. | 229Y1A0223 | K Sudha Kranthi | EEE | 4 | 1 | Excellent | 1 | Yes | No |
| 12/30/2022 22:29 | 229y1a0231@ksrmce.ac. | 229Y1A0231 | M.swathi | EEE | 3 | 3 | Excellent | 4 | Yes | Nothing |
| 12/30/2022 22:29 | 229y1a0239@ksrmce.ac. | 229Y1A0239 | MUKUNDAM NAIDU | EEE | 4 | 4 | Good | 4 | Yes | Good college |
| 12/31/2022 12:29 | 229y1a0250@ksrmce.ac. | 229Y1A0250 | S.vyshnavi | EEE | 4 | 4 | Good | 3 | Maybe | |
| 12/30/2022 22:29 | 229y1a0256@ksrmce.ac. | 229Y1A0256 | T.Pavan Kumar | EEE | 4 | 1 | Excellent | 1 | Yes | No |
| 12/30/2022 22:29 | 229y1a0406@ksrmce.ac. | 229Y1A0406 | A. Usha Kiran Reddy | Ece A | 1 | 2 | Good | 2 | Maybe | |
| 12/30/2022 12:29 | 229y1a0407@ksrmce.ac. | 229Y1A0407 | A.hakshay Swethan Redd | ECE&A | 4 | 4 | Good | 4 | Yes | Excellent |
| 12/31/2022 12:29 | 229y1a0412@ksrmce.ac. | 229Y1A0412 | B.kesava | ECE A/s | 3 | 4 | Average | 3 | No | No suggestions |
| 12/30/2022 12:29 | 229y1a0417@ksrmce.ac. | 229Y1A0417 | B.chilti | ECE -A sec | 3 | 3 | Good | 3 | Yes | |
| 12/30/2022 12:29 | 229y1a0422@ksrmce.ac. | 229Y1A0422 | B.Manisha | ECE-A | 4 | 4 | Excellent | 4 | Yes | |
| 1/1/2023 7:1 | 229y1a0423@ksrmce.ac. | 229Y1A0423 | B Tagore | ECE A/S | 4 | 3 | Good | 4 | Yes | |
| 12/31/2022 12:29 | 229y1a0425@ksrmce.ac. | 229Y1A0425 | B. Venkata sai | Ece(A) | 4 | 4 | Excellent | 4 | Yes | It was good for me |
| 12/30/2022 12:29 | 229y1a0426@ksrmce.ac. | 229Y1A0426 | B.Sai Krishna | ECE-A | 4 | 3 | Good | 3 | Yes | No |
| 12/31/2022 12:29 | 229y1a0429@ksrmce.ac. | 229Y1A0429 | B. Vidya Warshini | Ece -A | 3 | 3 | Good | 3 | Maybe | |
| 12/30/2022 12:29 | 229y1a0436@ksrmce.ac. | 229Y1A0436 | C.Harish Kumar Reddy | ECE A secti | 3 | 4 | Good | 3 | Yes | It is better to all students |
| 12/30/2022 12:29 | 229y1a0437@ksrmce.ac. | 229Y1A0437 | C.swarna Latha | ECE _A Sec | 4 | 4 | Excellent | 4 | Yes | No _sagition |
| 12/30/2022 12:29 | 229y1a0438@ksrmce.ac. | 229Y1A0438 | C.Pravallika | ECE A/S | 4 | 4 | Excellent | 4 | Yes | |
| 12/30/2022 12:29 | 229y1a0439@ksrmce.ac. | 229Y1A0439 | C.chinnannagari sravanth | ECE-A | 4 | 4 | Excellent | 4 | Yes | |
| 12/30/2022 12:29 | 229y1a0457@ksrmce.ac. | 229Y1A0457 | D. Vajeeda Tabassum | ECE-A | 4 | 4 | Excellent | 4 | Yes | No suggestions |
| 12/30/2022 12:29 | 229y1a0458@ksrmce.ac. | 229Y1A0458 | D.GAYATHRI | ECE-A | 4 | 4 | Excellent | 4 | Yes | |
| 12/30/2022 12:29 | 229y1a0460@ksrmce.ac. | 229Y1A0460 | G. Navya | ECE-A | 3 | 4 | Excellent | 4 | Yes | No suggestions |
| 12/30/2022 12:29 | 229y1a0461@ksrmce.ac. | 229Y1A0461 | G Shashidhar Reddy | Ece-B/s | 4 | 3 | Excellent | 3 | Yes | No suggestions |
| 12/30/2022 12:29 | 229y1a0462@ksrmce.ac. | 229Y1A0462 | G.Sudha Rani | ECE -B | 3 | 3 | Good | 2 | Maybe | No |
| 12/30/2022 12:29 | 229y1a0465@ksrmce.ac. | 229Y1A0465 | G.Bindu sree | ECE -B | 4 | 4 | Excellent | 4 | Yes | No suggestion |
| 12/31/2022 12:29 | 229y1a0466@ksrmce.ac. | 229Y1A0466 | G. Maha Lakshmi | ECE-B | 3 | 3 | Good | 2 | Yes | Slow explanation needed |
| 12/31/2022 12:29 | 229y1a0467@ksrmce.ac. | 229Y1A0467 | G.Kusuma | Ece-b | 4 [1] | 4 [2] | Excellent [3 | 4 [4] | Yes | Nothing |
| 12/31/2022 12:29 | 229y1a0468@ksrmce.ac. | 229Y1A0468 | G S SAMEERA | ECE-B | 3 | 3 | Good | 4 | Yes | Nothing |
| 12/30/2022 12:29 | 229y1a0469@ksrmce.ac. | 229Y1A0469 | I. Madava Reddy | ECE&B/S | 4 | 4 | Excellent | 3 | Yes | |
| 12/31/2022 12:29 | 229y1a0472@ksrmce.ac. | 229Y1A0472 | J Kiran kumar | 1 sem ECE | 4 | 4 | Excellent | 4 | Yes | To be improve more |
| 12/30/2022 12:29 | 229y1a0474@ksrmce.ac. | 229Y1A0474 | K. Naga Iswarya | Ece-B/S | 3 | 3 | Good | 3 | Yes | |
| 1/1/2023 13:22 | 229y1a0476@ksrmce.ac. | 229Y1A0476 | K.Hareesh Kumar Reddy | E.C.E&B | 2 | 2 | Good | 3 | Maybe | |
| 12/30/2022 12:29 | 229y1a0477@ksrmce.ac. | 229Y1A0477 | K.Mahendra | Ece-B/s | 3 | 4 | Good | 3 | Maybe | No |
| 12/31/2022 12:29 | 229y1a0478@ksrmce.ac. | 229Y1A0478 | K.Gangireddy | Ece-B | 4 | 4 | Good | 4 | Yes | Thanks sir |
| 12/30/2022 12:29 | 229y1a0479@ksrmce.ac. | 229Y1A0479 | K. Tharik baba tajuddin | ECE -B | 4 | 2 | Average | 2 | Maybe | Ntg |
| 1/5/2023 16:22 | 229y1a0482@ksrmce.ac. | 229Y1A0482 | Bhudevi | ECE -B | 3 | 2 | Good | 3 | Maybe | |


| 2022-23 Solid State Physics VAC End Survey | | | | | | | | | | |
|--|------------------------|------------|------------------------|------------------------------|----|----------------------|-----------|--------|-------|---|
| Timestamp | Email Address | Roll No | Name | Branch & Source met concepts | 3. | How well sessions is | 5. | Do you | 6. | Any suggestions |
| 12/30/2022 | 1229y1a0484@ksrmce.ac. | 229Y1A0484 | K.Imanisha | ECE-B | 3 | 4 | Excellent | 4 | Yes | |
| 12/30/2022 | 1229y1a0485@ksrmce.ac. | 229Y1A0485 | k.poorna chandra reddy | ECE-B | 4 | 4 | Good | 4 | Maybe | |
| 12/30/2022 | 1229y1a0486@ksrmce.ac. | 229y1a0486 | K.Vishnu vardhan reddy | Ece B/S | 4 | 4 | Good | 4 | Yes | No |
| 12/30/2022 | 1229y1a0489@ksrmce.ac. | 229Y1A0489 | K.Byula | ECE-B | 4 | 4 | Good | 4 | Yes | All about good |
| 12/30/2022 | 1229y1a0490@ksrmce.ac. | 229y1a0490 | K.Linganna | ECE-B | 3 | 3 | Good | 3 | Yes | While teaching sessions ask questions to the students for every topic |
| 12/30/2022 | 1229y1a0491@ksrmce.ac. | 229y1A0491 | L.prasanth | ECE/B | 4 | 4 | Good | 4 | Yes | Good course |
| 12/30/2022 | 1229y1a0492@ksrmce.ac. | 229y1a0492 | L.Sai prakash | ECE - B/sect | 3 | 3 | Good | 4 | Yes | |
| 12/30/2022 | 1229y1a0494@ksrmce.ac. | 229y1A0494 | M.Aravind | ECE-B | 4 | 4 | Excellent | 4 | Maybe | |
| 12/30/2022 | 1229y1a0499@ksrmce.ac. | 229y1A0499 | M. Gnaneswar | B/S | 3 | 4 | Excellent | 3 | Yes | No suggestions |
| 12/30/2022 | 1229y1a04a0@ksrmce.ac. | 229Y1A04A0 | M.srilatha yadav | 1,ECE-B | 2 | 3 | Good | 2 | Maybe | |
| 12/30/2022 | 1229y1a04a3@ksrmce.ac. | 229Y1A04A3 | M.indupriya | Ece b | 4 | 4 | Good | 4 | Maybe | |
| 12/30/2022 | 1229y1a04a4@ksrmce.ac. | 229Y1A04A4 | M.Harshitha | ECE - B | 3 | 4 | Excellent | 4 | Yes | No |
| 12/30/2022 | 1229y1a04a6@ksrmce.ac. | 229Y1A04A6 | M.praveen | ECE B | 2 | 2 | Good | 1 | Maybe | |
| 12/30/2022 | 1229y1a04a7@ksrmce.ac. | 229Y1A04A7 | N madhu | ECE/B | 4 | 3 | Good | 4 | Yes | No |
| 12/30/2022 | 1229y1a04b0@ksrmce.ac. | 229Y1A04B0 | N.Lingeswar Reddy | Ece & B | 3 | 2 | Average | 3 | Maybe | |
| 12/30/2022 | 1229y1a04b2@ksrmce.ac. | 229Y1A04B2 | P SAI PRASANNA LAKSHI | ECE-B sect | 4 | 4 | Excellent | 4 | Yes | No suggestion |
| 12/30/2022 | 1229y1a04b3@ksrmce.ac. | 229Y1A04B3 | P.Narasimhulu | ECE-B/S | 4 | 4 | Excellent | 3 | Yes | No suggestion |
| 12/30/2022 | 1229y1a04b4@ksrmce.ac. | 229Y1A04B4 | P. Pavithra | ECE / B | 3 | 3 | Good | 1 | Yes | No |
| 12/30/2022 | 1229y1a04b5@ksrmce.ac. | 229Y1A04B5 | P. Vyshnavi | ECE-B | 3 | 4 | Excellent | 4 | Yes | |
| 12/30/2022 | 1229y1a04b6@ksrmce.ac. | 229y1a04b6 | P.jagan mohan reddy | ECE-B | 4 | 4 | Good | 3 | Yes | |
| 12/30/2022 | 229y1a04c6@ksrmce.ac. | 229Y1A04C6 | P.HARSHITHA | ECE C/S | 4 | 3 | Good | 3 | Yes | No suggestions |
| 12/30/2022 | 229y1a04d1@ksrmce.ac. | 229y1a04d1 | P. Tejaswini | ECE-C | 2 | 3 | Good | 3 | Maybe | |
| 12/30/2022 | 229y1a04d3@ksrmce.ac. | 229Y1A04D3 | R.Siva Kumar Reddy | ECE C | 3 | 2 | Good | 2 | Maybe | No |
| 12/30/2022 | 229y1a04d9@ksrmce.ac. | 229Y1A04D9 | S.Roopa | ECE (c) | 4 | 3 | Good | 3 | Yes | No suggestions |
| 12/30/2022 | 229y1a04f3@ksrmce.ac. | 229y1a04f3 | Sompalli sadvika | Ece/c | 2 | 3 | Excellent | 2 | Maybe | --- |
| 12/30/2022 | 229y1a04g6@ksrmce.ac. | 229Y1A04G6 | U.keerthi | ECE C | 4 | 4 | Good | 4 | Yes | |
| 12/30/2022 | 229y1a04g7@ksrmce.ac. | 229y1a04g7 | V. Mythri | Ece-c/s | 2 | 2 | Good | 3 | Yes | Nothing |

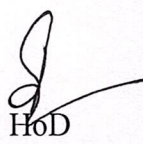
K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF HUMANITIES AND SCIENCES
VALUE ADDED/CERTIFICATE COURSE ON
“SOLID STATE PHYSICS” FROM 21/11/2022 TO 30/12/2022
AWARD LIST

| S.No | Roll Number | Name of the Student | Marks Obtained (20M) |
|------|-------------|-------------------------|----------------------|
| 1 | 219Y1A0471 | KatikaWaseemAkhthar | 12 |
| 2 | 229Y1A0203 | A.Malliswarireddy | 14 |
| 3 | 229Y1A0210 | B.Rani | 16 |
| 4 | 229Y1A0212 | Cpragathi | 11 |
| 5 | 229Y1A0216 | D.Gayathri | 13 |
| 6 | 229Y1A0217 | G.Maheswari | 14 |
| 7 | 229Y1aA0223 | KSudhaKranthi | 12 |
| 8 | 229Y1A0231 | M.swathi | 16 |
| 9 | 229Y1A0239 | Mukundam Naidu | 13 |
| 10 | 229Y1A0250 | S.vyshnavi | 14 |
| 11 | 229Y1A0256 | T.Pavan Kumar | 15 |
| 12 | 229Y1A0406 | A.UshaKiranReddy | 17 |
| 13 | 229Y1A0407 | A.hakshaySwethanReddy | 13 |
| 14 | 229Y1A0412 | B.kesava | 12 |
| 15 | 229Y1A0417 | B.chitti | 13 |
| 16 | 229Y1A0422 | B.Manisha | 14 |
| 17 | 229Y1A0423 | BTagore | 15 |
| 18 | 229Y1A0425 | B.Venkatasai | 16 |
| 19 | 229Y1A0426 | B.SaiKrishna | 14 |
| 20 | 229Y1A0429 | B.VidyaWarshini | 11 |
| 21 | 229Y1A0436 | C.HarishKumarReddy | 14 |
| 22 | 229Y1A0437 | C.swarnaLatha | 15 |
| 23 | 229Y1A0438 | C.Pravallika | 11 |
| 24 | 229Y1A0439 | C.chinnannagarisravanth | 12 |
| 25 | 229Y1A0457 | D. VajeedaTabassum | 14 |
| 26 | 229Y1A0458 | D.GAYATHRI | 10 |
| 27 | 229Y1A0460 | G.Navya | 10 |
| 28 | 229Y1A0461 | GShashidharReddy | 12 |
| 29 | 229Y1A0462 | G.SudhaRani | 16 |

| | | | |
|----|------------|-------------------------|----|
| 30 | 229Y1A0465 | G.Bindu sree | 17 |
| 31 | 229y1a0466 | G. Maha Lakshmi | 16 |
| 32 | 229Y1A0467 | G.Kusuma | 18 |
| 33 | 229Y1A0468 | G S SAMEERA | 18 |
| 34 | 229Y1A0469 | I. Madava Reddy | 17 |
| 35 | 229Y1A0472 | J Kiran kumar | 16 |
| 36 | 229Y1A0474 | K. Naga Iswarya | 14 |
| 37 | 229Y1A0476 | K.Hareesh Kumar Reddy | 15 |
| 38 | 229Y1A0477 | K.Mahendra | 12 |
| 39 | 229Y1A0478 | K.Gangireddy | 13 |
| 40 | 229Y1A0479 | K. Tharik baba tajuddin | 15 |
| 41 | 229Y1A0482 | Bhudevi | 14 |
| 42 | 229Y1A0484 | K.Imanisha | 15 |
| 43 | 229Y1A0485 | k.poorna chandra reddy | 15 |
| 44 | 229Y1A0486 | K.Vishnu vardhan reddy | 17 |
| 45 | 229Y1A0489 | K.Byula | 18 |
| 46 | 229Y1A0490 | K.Linganna | 16 |
| 47 | 229y1A0491 | L.prasanth | 15 |
| 48 | 229Y1A0492 | L.Sai prakash | 17 |
| 49 | 229Y1A0494 | M.Aravind | 18 |
| 50 | 229y1A0499 | M. Gnaneswar | 18 |
| 51 | 229Y1A04A0 | M.srilatha yadav | 19 |
| 52 | 229Y1A04A3 | M.indupriya | 16 |
| 53 | 229Y1A04A4 | M.Harshitha | 12 |
| 54 | 229Y1A04A6 | M.praveen | 13 |
| 55 | 229Y1A04A7 | N madhu | 12 |
| 56 | 229Y1A04B0 | N.Lingeswar Reddy | 10 |
| 57 | 229Y1A04B2 | P SAI PRASANNA LAKS | 11 |
| 58 | 229Y1A04B3 | P.Narasimhulu | 13 |
| 59 | 229Y1A04B4 | P. Pavithra | 15 |
| 60 | 229Y1A04B5 | P. Vyshnavi | 16 |
| 61 | 229y1a04b6 | P.jagan mohan reddy | 12 |
| 62 | 229Y1A04C6 | P.HARSHITHA | 10 |
| 63 | 229D1A04d1 | P. Tejaswini | 11 |

| | | | |
|----|------------|--------------------|----|
| 64 | 229Y1A04D3 | R.Siva Kumar Reddy | 16 |
| 65 | 229Y1A04D9 | S.Roopu | 13 |
| 66 | 229Y1A04f3 | Sompalli sadvika | 11 |
| 67 | 229Y1A04G6 | U.keerthi | 10 |
| 68 | 229Y1A04g7 | V. Mythri | 12 |


Coordinator


HoD
Dr. I. SREEVANI M.Sc., Ph.D
Professor & HOD
Dept.of Humanities & sciences
K.S.R.M. College of Engineering
KADAPA Dist.

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003

DEPARTMENT OF HUMANITIES & SCIENCES

VALUE ADDED /CERTIFICATE COURSE ON

“SOLID STATE PHYSICS” FROM 21/11/2022 TO 30/12/2022

ASSESSMENT TEST

Roll Number: _____ **Name of the Student:** _____

Time: 20 Min

(Objective Questions)

Max.Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1. Atomic packing factor of simple cubic crystal system in []
a) 0.68 b) 0.7 c) 1.0 d) 0.52
2. Lattice + Basis = []
a) Unit cell b) Crystal c) Amorphous solid d) None of this
3. The miller indices of the plane parallel to z-axis are []
a) (0 0 1) b) (1 1 0) c) (101) d) (100)
4. Which of the following has the greatest packing fraction []
a) SC b) BCC c) FCC d) None
5. The Resistivity of a superconductor is []
a) Zero b) Finite c) Infinite d) None
6. BCS theory introduced the concept of []
a) Phonon pairs b) Copper pair c) Photon pairs d) Neutron pairs
7. Type - I super conductors are called as super conductors. []
a) Soft b) Hard c) Both a and b d) None
8. Who was the first to propose the concept of super conductivity []
a) Schriffner b) Bardeen c) Copper d) KammerlinghOnnes
9. The highest energy level occupied by electrons at absolute 0K is called []
a) Fermi energy level b) end level c) local level d) None

10. Classical free electron theory was proposed by []

- a) Drude and Lorentz b) Boltzmann's c) Keepers d) Heisenberg

11. Quantum free electron theory was proposed by []

- a) Somerfield b) Lorentz c) Einstein d) Pluto

12. The cause for electrical resistance of a metal is []

- a) By the impurities b) By lattice vibrations c) By structural imperfections d) **All**

13. The SI unit of magnetic moment is []

- a) Wb b) Wb/m^2 c) A/m^2 d) A-m^2

14. The area enclosed by hysteresis loop is a measure of []

- a) Retentivity b) Susceptibility c) Permeability d) Energy loss per cycle

15. Material which lack permanent dipoles are called _____ []

- a) Diamagnetic b) Paramagnetic c) Ferry magnetic d) Ferromagnetic

16. Diamagnetic susceptibility is []

- a) Large, Negative b) Small, Negative c) Small, Positive d) Large, Positive

17. The electric and magnetic fields are basically []

- a) Dependent b) independent c) equal d) done

18. The gradient of any vector function is a []

- a) Vector b) scalar c) constant d) none

19. The divergence of a vector is a []

- a) Vector b) scalar c) constant d) none

20. The line integral of the tangential component of a vector around the area per unit area is called []

- a) Gradient b) divergence c) curl d) del

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003

DEPARTMENT OF HUMANITIES & SCIENCES

VALUE ADDED /CERTIFICATE COURSE ON

"SOLID STATE PHYSICS" FROM 21/11/2022 TO 30/12/2022

ASSESSMENT TEST

Roll Number: 2297/A0231 Name of the Student: M. Swathi

16
20
4/4/

Time: 20 Min

(Objective Questions)

Max.Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1. Atomic packing factor of simple cubic crystal system in

[d]

- a) 0.68 b) 0.7 c) 1.0 d) 0.52

2. Lattice + Basis =

[b]

- a) Unit cell b) Crystal c) Amorphous solid d) None of this

3. The miller indices of the plane parallel to z-axis are

[c]

- a) (0 0 1) b) (1 1 0) c) (101) d) (100)

4. Which of the following has the greatest packing fraction

[a]

- a) SC b) BCC c) FCC d) None

5. The Resistivity of a superconductor is

[b]

- a) Zero b) Finite c) Infinite d) None

6. BCS theory introduced the concept of

[a]

- a) Phonon pairs b) Copper pair c) Photon pairs d) Neutron pairs

7. Type - I super conductors are called as super conductors.

[d]

- a) Soft b) Hard c) Both a and b d) None

8. Who was the first to propose the concept of super conductivity

[d]

- a) Schriffner b) Bardeen c) Copper d) KammerlinghOnnes

9. The highest energy level occupied by electrons at absolute 0K is called

[a]

- a) Fermi energy level b) end level c) local level d) None

10. Classical free electron theory was proposed by [a]
a) Drude and Lorentz b) Boltzmann's c) Keepers d) Heisenberg

11. Quantum free electron theory was proposed by [a]
a) Somerfield b) Lorentz c) Einstein d) Pluto

12. The cause for electrical resistance of a metal is [d]
a) By the impurities b) By lattice vibrations c) By structural imperfections d) All

13. The SI unit of magnetic moment is [b]
a) Wb b) Wb/m^2 c) A/m^2 d) A-m^2

14. The area enclosed by hysteresis loop is a measure of [d]
a) Retentivity b) Susceptibility c) Permeability d) Energy loss per cycle

15. Material which lack permanent dipoles are called [a]
a) Diamagnetic b) Paramagnetic c) Ferry magnetic d) Ferromagnetic

16. Diamagnetic susceptibility is [b]
a) Large, Negative b) Small, Negative c) Small, Positive d) Large, Positive

17. The electric and magnetic fields are basically [b]
a) Dependent b) independent c) equal d) done

18. The gradient of any vector function is a [a]
a) Vector b) scalar c) constant d) none

19. The divergence of a vector is a [b]
a) Vector b) scalar c) constant d) none

20. The line integral of the tangential component of a vector around the area per unit area is called [c]
a) Gradient b) divergence c) curl d) del

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VALUE ADDED /CERTIFICATE COURSE ON

"SOLID STATE PHYSICS" FROM 21/11/2022 TO 30/12/2022

ASSESSMENT TEST

Roll Number: 229Y/A0429 Name of the Student: B. vidya warehmi

Time: 20 Min

(Objective Questions)

Max.Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1. Atomic packing factor of simple cubic crystal system in [d]
a) 0.68 b) 0.7 c) 1.0 d) 0.52
2. Lattice + Basis = [b]
a) Unit cell b) Crystal c) Amorphous solid d) None of this
3. The miller indices of the plane parallel to z-axis are [c]
a) (0 0 1) b) (1 1 0) c) (101) d) (100)
4. Which of the following has the greatest packing fraction [c]
a) SC b) BCC c) FCC d) None
5. The Resistivity of a superconductor is [c]
a) Zero b) Finite c) Infinite d) None
6. BCS theory introduced the concept of [c]
a) Phonon pairs b) Copper pair c) Photon pairs d) Neutron pairs
7. Type - I super conductors are called as super conductors. [a]
a) Soft b) Hard c) Both a and b d) None
8. Who was the first to propose the concept of super conductivity [d]
a) Schrifferr b) Bardeen c) Copper d) KammerlinghOnnes
9. The highest energy level occupied by electrons at absolute 0K is called [a]
a) Fermi energy level b) end level c) local level d) None

10. Classical free electron theory was proposed by [a] ✓

- a) Drude and Lorentz b) Boltzmann's c) Keepers d) Heisenberg

11. Quantum free electron theory was proposed by [d] ✓

- a) Somerfield b) Lorentz c) Einstein d) Pluto

12. The cause for electrical resistance of a metal is [d] ✓

- a) By the impurities b) By lattice vibrations c) By structural imperfections d) All

13. The SI unit of magnetic moment is [b] ✓

- a) Wb b) Wb/m^2 c) A/m^2 d) A-m^2

14. The area enclosed by hysteresis loop is a measure of [d] ✓

- a) Retentivity b) Susceptibility c) Permeability d) Energy loss per cycle

15. Material which lack permanent dipoles are called [c] ✓

- a) Diamagnetic b) Paramagnetic c) Ferry magnetic d) Ferromagnetic

16. Diamagnetic susceptibility is [a] ✓

- a) Large, Negative b) Small, Negative c) Small, Positive d) Large, Positive

17. The electric and magnetic fields are basically [e] ✓

- a) Dependent b) independent c) equal d) done

18. The gradient of any vector function is a [c] ✓

- a) Vector b) scalar c) constant d) none

19. The divergence of a vector is a [d] ✓

- a) Vector b) scalar c) constant d) none

20. The line integral of the tangential component of a vector around the area per unit area is called [a] ✓

- a) Gradient b) divergence c) curl d) del

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DEPARTMENT OF HUMANITIES & SCIENCES

VALUE ADDED /CERTIFICATE COURSE ON

"SOLID STATE PHYSICS" FROM 21/11/2022 TO 30/12/2022

ASSESSMENT TEST

Roll Number: 229Y1A0467 Name of the Student: G. kusuma

Time: 20 Min

(Objective Questions)

Max.Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1. Atomic packing factor of simple cubic crystal system in [d]

- a) 0.68 b) 0.7 c) 1.0 d) 0.52

2. Lattice + Basis = [b]

- a) Unit cell b) Crystal c) Amorphous solid d) None of this

3. The miller indices of the plane parallel to z-axis are [c]

- a) (0 0 1) b) (1 1 0) c) (101) d) (100)

4. Which of the following has the greatest packing fraction [c]

- a) SC b) BCC c) FCC d) None

5. The Resistivity of a superconductor is [a]

- a) Zero b) Finite c) Infinite d) None

6. BCS theory introduced the concept of [b]

- a) Phonon pairs b) Copper pair c) Photon pairs d) Neutron pairs

7. Type - I super conductors are called as super conductors. [a]

- a) Soft b) Hard c) Both a and b d) None

8. Who was the first to propose the concept of super conductivity [d]

- a) Schriffier b) Bardeen c) Copper d) KammerlinghOnnes

9. The highest energy level occupied by electrons at absolute 0K is called [b]

- a) Fermi energy level b) end level c) local level d) None

10. Classical free electron theory was proposed by [b]
a) Drude and Lorentz b) Boltzmann's c) Keepers d) Heisenberg
11. Quantum free electron theory was proposed by [a]
a) Somerfield b) Lorentz c) Einstein d) Pluto
12. The cause for electrical resistance of a metal is [d]
a) By the impurities b) By lattice vibrations c) By structural imperfections d) All
13. The SI unit of magnetic moment is [b]
a) Wb b) Wb/m^2 c) A/m^2 d) A-m^2
14. The area enclosed by hysteresis loop is a measure of [d]
a) Retentivity b) Susceptibility c) Permeability d) Energy loss per cycle
15. Material which lack permanent dipoles are called [a]
a) Diamagnetic b) Paramagnetic c) Ferry magnetic d) Ferromagnetic
16. Diamagnetic susceptibility is [b]
a) Large, Negative b) Small, Negative c) Small, Positive d) Large, Positive
17. The electric and magnetic fields are basically [b]
a) Dependent b) independent c) equal d) done
18. The gradient of any vector function is a [a]
a) Vector b) scalar c) constant, d) none
19. The divergence of a vector is a [b]
a) Vector b) scalar c) constant d) none
20. The line integral of the tangential component of a vector around the area per unit area is called [c]
a) Gradient b) divergence c) curl d) del

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DEPARTMENT OF HUMANITIES & SCIENCES

VALUE ADDED /CERTIFICATE COURSE ON

"SOLID STATE PHYSICS" FROM 21/11/2022 TO 30/12/2022

ASSESSMENT TEST

Roll Number: 22991A04C6 Name of the Student: P. Harshitha

10/20

Time: 20 Min

(Objective Questions)

Max.Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1. Atomic packing factor of simple cubic crystal system in [d]
a) 0.68 b) 0.7 c) 1.0 d) 0.52
2. Lattice + Basis = [b]
a) Unit cell b) Crystal c) Amorphous solid d) None of this
3. The miller indices of the plane parallel to z-axis are [c]
a) (0 0 1) b) (1 1 0) c) (101) d) (100)
4. Which of the following has the greatest packing fraction [c]
a) SC b) BCC c) FCC d) None
5. The Resistivity of a superconductor is [a]
a) Zero b) Finite c) Infinite d) None
6. BCS theory introduced the concept of [b]
a) Phonon pairs b) Copper pair c) Photon pairs d) Neutron pairs
7. Type - I super conductors are called as super conductors. [a]
a) Soft b) Hard c) Both a and b d) None
8. Who was the first to propose the concept of super conductivity [a]
a) Schrifferr b) Bardeen c) Copper d) KammerlinghOnnes
9. The highest energy level occupied by electrons at absolute 0K is called [b]
a) Fermi energy level b) end level c) local level d) None

10. Classical free electron theory was proposed by [b]
a) Drude and Lorentz b) Boltzmann's c) Keepers d) Heisenberg
11. Quantum free electron theory was proposed by [c]
a) Somerfield b) Lorentz c) Einstein d) Pluto
12. The cause for electrical resistance of a metal is [c]
a) By the impurities b) By lattice vibrations c) By structural imperfections d) All
13. The SI unit of magnetic moment is [d]
a) Wb b) Wb/m^2 c) A/m^2 d) A-m^2
14. The area enclosed by hysteresis loop is a measure of [a]
a) Retentivity b) Susceptibility c) Permeability d) Energy loss per cycle
15. Material which lack permanent dipoles are called [c]
a) Diamagnetic b) Paramagnetic c) Ferry magnetic d) Ferromagnetic
16. Diamagnetic susceptibility is [d]
a) Large, Negative b) Small, Negative c) Small, Positive d) Large, Positive
17. The electric and magnetic fields are basically [c]
a) Dependent b) independent c) equal d) done
18. The gradient of any vector function is a [b]
a) Vector b) scalar c) constant d) none
19. The divergence of a vector is a [b]
a) Vector b) scalar c) constant d) none
20. The line integral of the tangential component of a vector around the area per unit area is called [c]
a) Gradient b) divergence c) curl d) del

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003

DEPARTMENT OF HUMANITIES & SCIENCES

VALUE ADDED /CERTIFICATE COURSE ON

"SOLID STATE PHYSICS" FROM 21/11/2022 TO 30/12/2022

ASSESSMENT TEST

Roll Number: 22941A0466 Name of the Student: U. Keerthi

10
20
4/24

Time: 20 Min

(Objective Questions)

Max.Marks: 20

Note: Answer the following Questions and each question carries **one** mark.

1. Atomic packing factor of simple cubic crystal system in [d]
a) 0.68 b) 0.7 c) 1.0 d) 0.52
2. Lattice + Basis = [b]
a) Unit cell b) Crystal c) Amorphous solid d) None of this
3. The miller indices of the plane parallel to z-axis are [c]
a) (0 0 1) b) (1 1 0) c) (101) d) (100)
4. Which of the following has the greatest packing fraction [c]
a) SC b) BCC c) FCC d) None
5. The Resistivity of a superconductor is [a]
a) Zero b) Finite c) Infinite d) None
6. BCS theory introduced the concept of [b]
a) Phonon pairs b) Copper pair c) Photon pairs d) Neutron pairs
7. Type - I super conductors are called as super conductors. [a]
a) Soft b) Hard c) Both a and b d) None
8. Who was the first to propose the concept of super conductivity [d]
a) Schriffer b) Bardeen c) Copper d) KammerlinghOnnes
9. The highest energy level occupied by electrons at absolute 0K is called [a]
a) Fermi energy level b) end level c) local level d) None

10. Classical free electron theory was proposed by [a]
a) Drude and Lorentz b) Boltzmann's c) Keepers d) Heisenberg
11. Quantum free electron theory was proposed by [c]
a) Somerfield b) Lorentz c) Einstein d) Pluto
12. The cause for electrical resistance of a metal is [d]
a) By the impurities b) By lattice vibrations c) By structural imperfections d) All
13. The SI unit of magnetic moment is [d]
a) Wb b) Wb/m^2 c) A/m^2 d) A-m^2
14. The area enclosed by hysteresis loop is a measure of [c]
a) Retentivity b) Susceptibility c) Permeability d) Energy loss per cycle
15. Material which lack permanent dipoles are called [b]
a) Diamagnetic b) Paramagnetic c) Ferry magnetic d) Ferromagnetic
16. Diamagnetic susceptibility is [a]
a) Large, Negative b) Small, Negative c) Small, Positive d) Large, Positive
17. The electric and magnetic fields are basically [c]
a) Dependent b) independent c) equal d) done
18. The gradient of any vector function is a [d]
a) Vector b) scalar c) constant d) none
19. The divergence of a vector is a [c]
a) Vector b) scalar c) constant d) none
20. The line integral of the tangential component of a vector around the area per unit area is called [b]
a) Gradient b) divergence c) curl d) del

CRYSTALLOGRAPHY AND ULTRASONICS

Ultrasonics: Introduction – Production of ultrasonics by piezoelectric method – Properties and detection – Applications in non-destructive testing.

The word *ultrasonic* combines the Latin roots *ultra* meaning 'beyond' and *sonic* meaning *sound*.

The sound waves having frequencies ranging from 20 Hz – 20 kHz are called audible range.

The sound waves having frequencies less than 20 Hz are called infrasonic.

The sound waves having frequencies above the audible range i.e. above 20000Hz are called *ultrasonic* waves. Generally these waves are called as *high frequency* waves.

Properties of ultrasonic waves:

1. The Ultrasonic waves can propagate through solids, liquids & gases.
2. The Ultrasonic waves cannot travel through vacuum.
3. These waves travel with speed of sound in a given medium.
4. These waves are not electromagnetic waves.
5. The Ultrasonic waves are high frequency sound waves.
6. They produce heating effect when passes through the medium.
7. These waves get reflected, refracted and absorbed by the medium.
8. They can be transmitted over large distances without loss of any energy.
9. These waves can weld certain plastics, metals etc.
10. They can produce vibrations in low viscosity liquids.
11. They produce stationary wave pattern in the liquid while passing through it.

Production of Ultrasonic waves:

PIEZO ELECTRIC GENERATOR OR OSCILLATOR:

PRINCIPLE:

If mechanical pressure is applied to one pair of opposite faces of certain crystals like quartz, Rochelle salt, tourmaline, etc., equal and opposite electrical charges appear across its other faces. This is called as **piezo-electric effect**.

The converse of piezoelectric effect is also true.

If an electric field is applied to one pair of faces, the corresponding changes in the dimensions of the other pair of faces of the crystal are produced. This is known as *inverse piezoelectric effect*.

Construction:

*

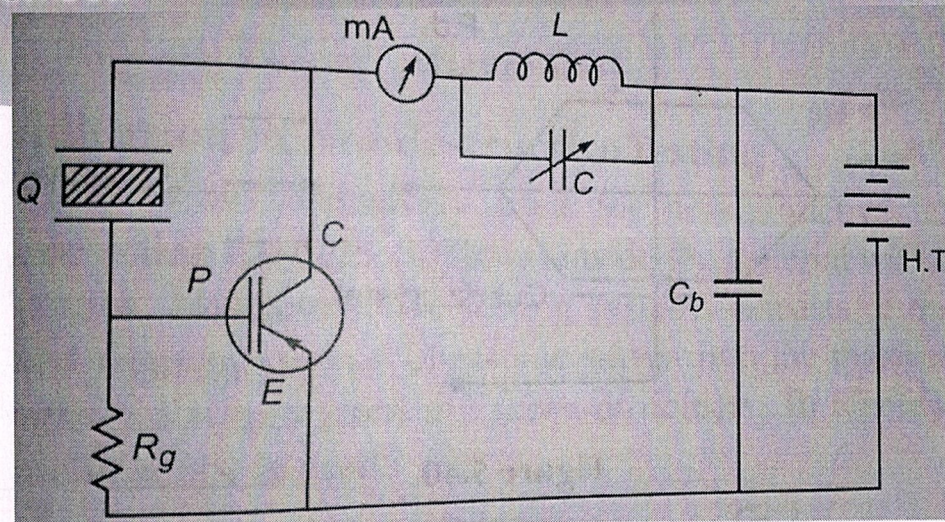


Fig: Piezo electric oscillator

- * The quartz crystal is placed between two metal plates A and B.
- * The plates are connected to the collector and base of transistor. Collector is also connected to LC circuit and high tension source shunted through a by-pass capacitor C_b .
- * C_b is used to stop high frequency currents from passing through battery.
- * The capacity of variable capacitor is adjusted so that the frequency of the oscillating circuits is equal to the natural frequency of the crystal.
- * R_g provides necessary biasing for the base and emitter circuit.

Working:

- * When H.T. battery is switched on, the circuit starts functioning slowly an alternating potential difference is built across the quartz crystal which sets the crystal into vibrations.
- * By varying the capacity of capacitor C, at a particular stage the frequency of the alternating potential across the crystal coincides with the natural frequency of quartz crystal setting it to produce ultrasonic waves.
- * This stage is indicated by milliammeter by showing maximum current.
- * The natural frequency of quartz crystal of thickness t is given by

$$f = \frac{n}{2l} \sqrt{\frac{Y}{\rho}}$$

where n = 1,2,3,4 ... etc. for fundamental, first over tone, second over tone etc.,

Y = Young's modulus of the crystal and
 ρ = density of the crystal.

Advantages:

1. Ultrasonic frequencies as high as 500 MHz can be obtained with this arrangement.
2. The output of this oscillator is very high.
3. It is not affected by temperature and humidity.

Disadvantages:

1. The cost of piezo electric quartz is very high
2. The cutting and shaping of quartz crystal are very complex.

Detection of ultrasonic waves:

Ultrasonic waves can be detected by various methods as listed below:

1. Piezoelectric detector:

- * Ultrasonic waves can be detected by using piezoelectric effect. As shown in Fig.1, when the faces of a quartz crystal along the mechanical axis is subjected to ultrasonic, then it undergoes compression and expansion. The opposite faces along the electrical axis, will have induced charges which establishes a potential difference across the faces. This potential difference indicates the presence of ultrasonic waves.

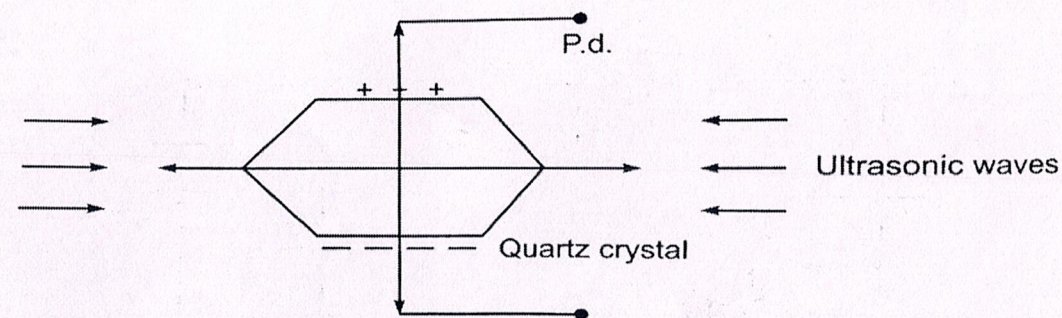
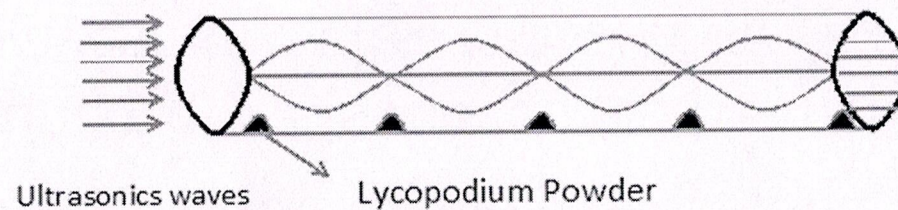


Fig.1: piezoelectric effect

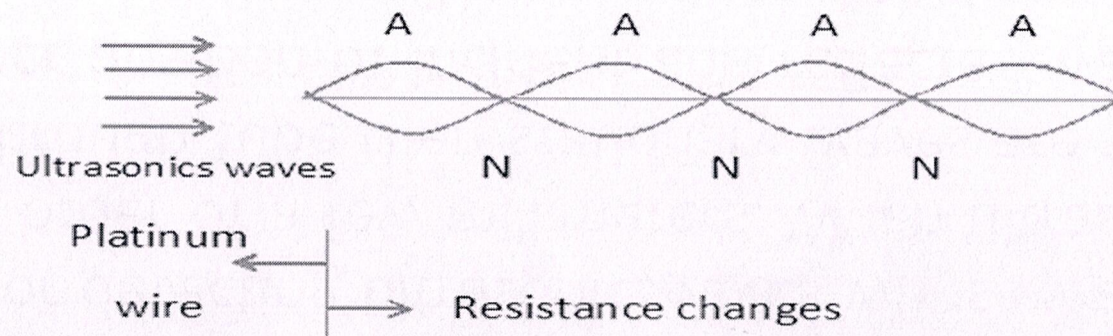
2. Kundt's tube method:

- * Kundt's tube filled with lycopodium powder can also be used for detecting ultrasonic waves whose wavelength is of the order of a few millimeters. When ultrasonic waves pass through tube then stationary waves are formed due to super position of incident and reflected waves. Heaps are formed at the position of nodes. The distance between adjacent nodes is calculated, which is equal to half the wavelength of ultrasonic waves. Hence with this method wavelength of ultrasonic waves can be calculated.



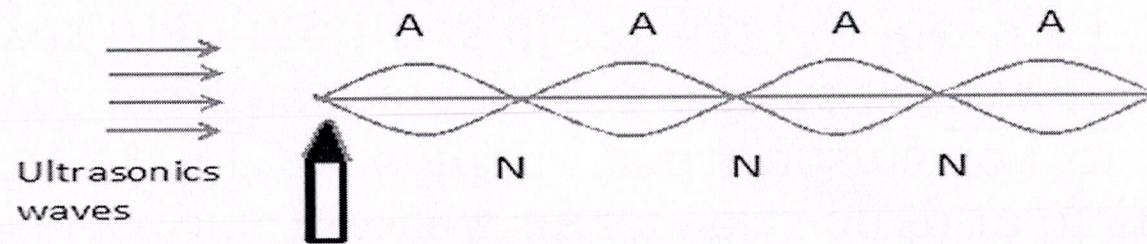
3. Thermal method for detection of ultrasonic waves:

- * When a platinum wire is moved in the medium consists of standing waves of ultrasonics due to variations of temperature at nodes and antinodes, the resistance of wire also changes. By noticing the changing in resistance of wire one can detect the presence of ultrasonic waves.



* **4. Sensitive flame method:**

- * When a narrow sensitive flame is moved in a medium where ultrasonic waves are present. The flame remains stationary at antinode and flickers at nodes.

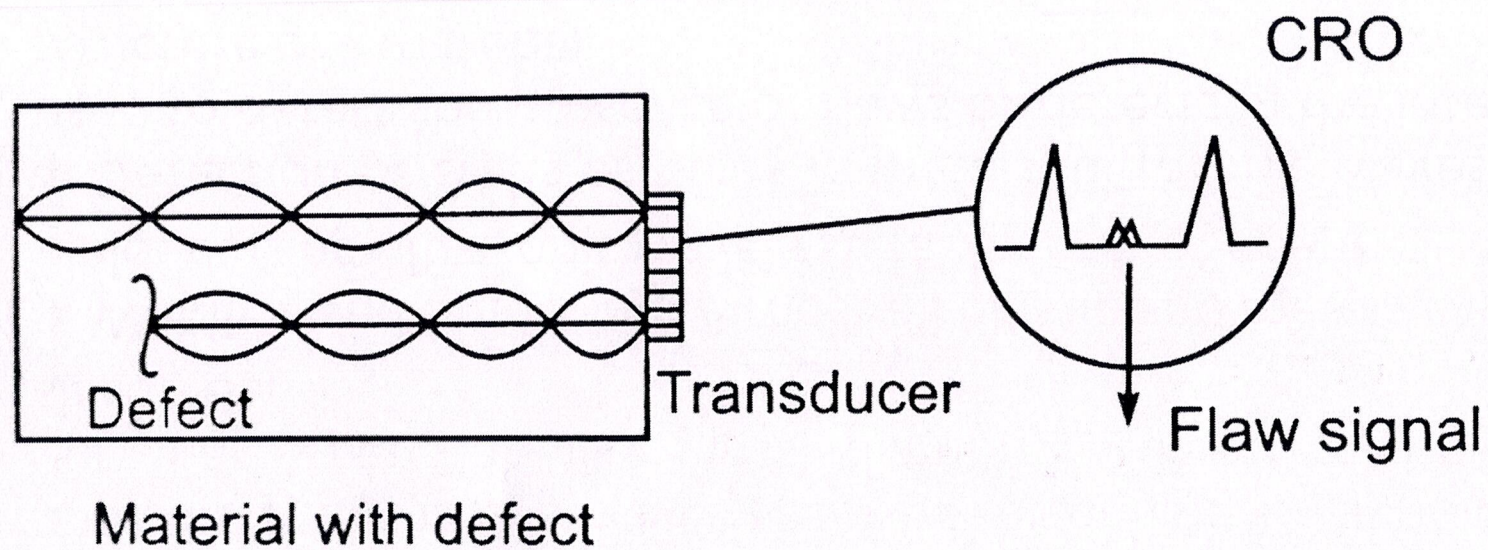
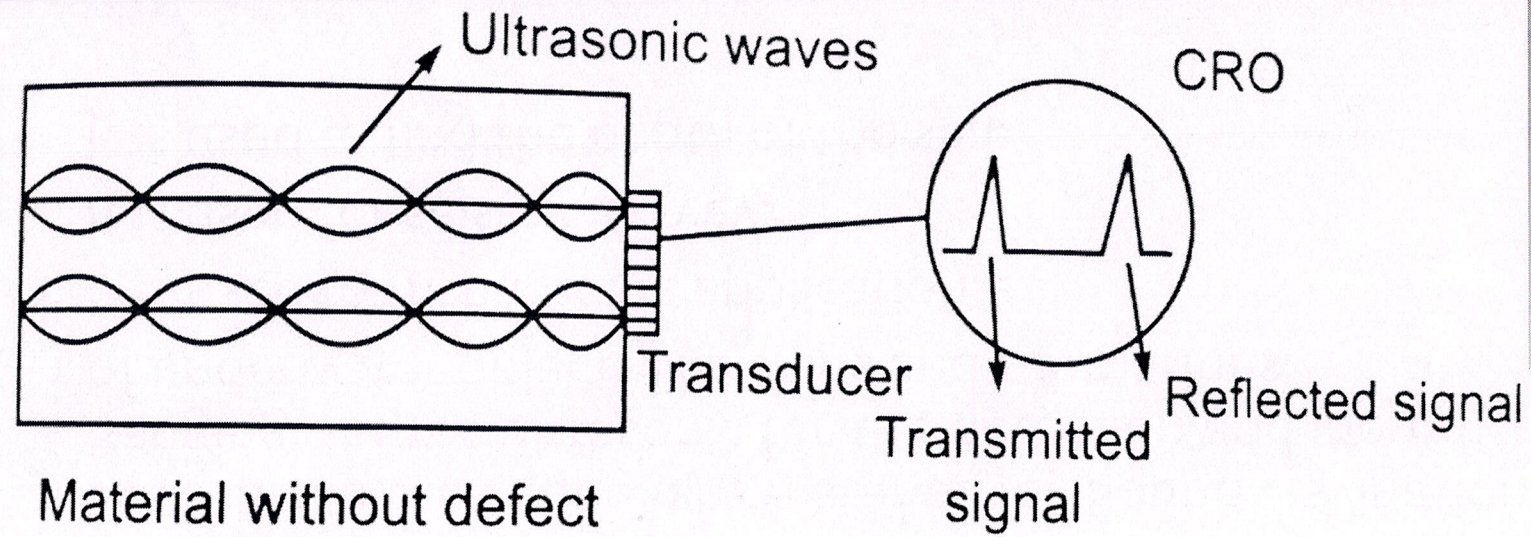


2.5. Applications of Ultrasonics:

1. Nondestructive Testing

- * Ultrasonic wave were extensively used for nondestructive testing of the material, i.e., detecting the defects (flaws) inside the material without disturbing material properties. Nondestructive testing systems consists of transducers (An electronic device that converts on form of energy into another) for generations and transmission of ultrasonic waves into the material and also to receive the reflected waves from the flaws or defects. To identify the defects, cathode ray oscilloscope is used.

When the transducer generates and transmits the ultrasonic waves into the testing material it will be reflected by the other end of the material and is received by the transducer. Corresponding to transmitted and reflected waves we can observe two well-resolved signals on the screen of CRO.



- * **2. Drilling:** Ultrasonic waves are used for drilling small holes in very hard materials like glass, diamond, quartz, calcite and silicon etc.
- * **3. Welding and Soldering:** Almost all plastic and metals can be welded using ultrasonic wave's suitable form of energy.
- * **4. Detection of cracks or flaws in metals:** ultrasonic waves are used to detect the presence of flaws or defects in the internal structure of a material.
- * **5. Marine applications:**
 - * SONAR is a technique which stands for Sound Navigation and Ranging. It uses ultrasonic for the detection and identification of underwater objects like ships and submarines.
 - * It is used for fish-finding application.
 - * It is used for seismic survey.
 - * It is used to find the depth of the sea.

*** 6. Medical applications:**

- * In therapeutics, ultrasonic waves are used to apply message and deep heat therapy to muscle tissues.
- * In diagnostics: Medical sonography is an ultrasound based diagnostic medical imaging technique used to visualize muscles, tendons.
- * Date of pregnancy
- * Check the location of the placenta
- * Check for the number of fetuses
- * Check for fetal movement, breathing and heartbeat.