**CHALAPATHI INSTITUTE OF ENGINEERING AND TECHNOLOGY**

CHALAPATHI NAGAR, LAM, GUNTUR

ANDHRA PRADESH-522034



**COURSE FILE**

Subject : Renewable Energy Sources (EE-416/1)

Class : IV/IV B.Tech, Ist Semester

Regulation : R-15

Prepared by

Mr.G. SATISH M.Tech

Assistant Professor

**DEPARTMENT OF**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**2019-20**



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**INSTITUTE VISION & MISSION**

**Vision**

To emerge as an Institute of Excellence for Engineering and Technology and provide world-class education and research opportunities to the students catering to the needs of society.

**Mission**

Establish a state-of-the-art Engineering Institute with continuously improving infrastructure and produce students with innovative skills and global outlook.

PRINCIPAL



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**VISION & MISSION**

**Vision**

Emphasize next practices of technical knowledge, analytical and practical skills necessary to meet the demands of Electronics and Communication Industry.

**Mission**

**DM1:** Provide quality education with state of art laboratories.

**DM2**: Collaborations with industries / organizations and provide trainings / internships to meet the demands of industry.

**DM3**: Create a research environment of excellence.

HOD-ECE



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G. SATISH | Year / Sem: B.Tech in ECE - IV/I | Academic Year: 2019-20 |

|  |  |
| --- | --- |
| **PROGRAM OUTCOMES (PO's)** | |
| A graduate of the Electronics and Communication Engineering Program will demonstrate: | |
| **PO1:** | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **PO2:** | **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences |
| **PO3:** | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **PO4:** | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **PO5:** | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **PO6:** | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **PO7:** | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **PO8:** | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **PO9:** | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **PO10:** | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **PO11:** | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |
| **PO12:** | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary  Environments. |

**HOD-ECE**



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| --- | --- | --- |
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**PROGRAM EDUCATIONAL OBJECTIVES (PEO’S)**

**PEO I**: Graduates shall excel in undergraduate programs and to succeed in industry or technical profession through global, rigorous education.

**PEO II**: Graduates shall have solid foundation in mathematical, scientific and Engineering fundamentals required to solve engineering problems and also to pursue higher studies.

**PEO III:** Graduates shall have good scientific and Engineering breadth so as to comprehend, analyse, design, and create solutions for novel products and the real life problems.

**PEO IV**: Graduates shall inculcate professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context, additional courses with regard to physical, psychological and career growth.

**PEO V :** Graduates shall have an academic environment aware of excellence, outstanding leadership, written ethical codes and guidelines with moral values, and the lifelong learning needed for a successful professional career.

**PROGRAM SPECIFIC OUTCOMES (PSO’S)**

* **PSO1:** **Professional Skills:** should be able to excel in communication / networking, VLSI, signal processing, embedded systems and semiconductor technology etc., and their applications.
* **PSO2:** **Problem Solving Skills**: An ability to solve complex electronics and communication engineering problems, using latest hardware and software tools, along with analytical skills to achieve cost-effective and appropriate solutions.
* **PSO3:** **Successful Career And Entrepreneurship:** Able to have social and environmental - wisdom along with ethical responsibility, to sustain zeal and passion for real world applications as an entrepreneur.

**HOD-ECE**

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|  | **ACHARYANAGARJUNAUNIVERSITY**  **IV/IV B.TECH - I SEMESTER,**  **ELECTRONICS & COMMUNICATION ENGINEERING**  **COURSE STRUCTURE** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Course Details** | | **Scheme of Instruction** | | | **Scheme of Examination** | | | **Credits** |
| **Code No.** | **Subject Name** | **Periods per week** | | | **Maximum Marks** | | **Total Marks** |
| **L** | **T** | **P** | **Internal** | **External** |
| 1 | **EE 416/1** | **RENEWABLE ENERGY SOURCES** | 4 | 0 | 0 | 40 | 60 | 100 | 3 |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Faculty Name: G. Satish**

**Subject: RENEWABLE ENERGY SOURCES (EE-416/1)**

**Year / Sem : IV/IV B.Tech, I SEM**

**UNIVERSITY SYLLABUS**

**UNIT-I 8Hrs**

**Principle of Renewable Energy:** Comparison of renewable and conventional energy sources - Ultimate energy sources - natural energy currents on earth - primary supply to end use - Spaghetti & Pie diagrams - energy planning – energy efficiency and management.

**UNIT-II 15Hrs**

**Solar Radiation:** Extra-terrestrial solar radiation - terrestrial solar radiation – solar thermal conversion - solar thermal central receiver systems - photovoltaic energy conversion - solar cells – 4 models.

**UNIT-III 15Hrs**

**Wind energy:** Planetary and local winds - vertical axis and horizontal axis wind mills - principles of wind power - maximum power - actual power - wind turbine operation - electrical generator.

**UNIT-IV 12Hrs**

**Energy from Oceans:** Ocean temperature differences - principles of OTEC plant operations - wave energy - devices for energy extraction – tides - simple single pool tidal system. **Geothermal energy:** Origin and types - Bio fuels – classification – direct combustion for heat and electricity generator - anaerobic digestion for biogas – biogas digester - power generation.

**TEXT BOOKS:**

1. Renewable Energy Sources by John Twidell & Toney Weir: E&F.N. Spon

2. Renewable Energy Sources: Their impact on global warming and pollution by Abbasi & Abbasi –PHI

**REFERENCE BOOKS:**

1. Power plant technology by EL-Wakil, Mc Graw-Hill

2. Non-Conventional Energy Sources by G.D.Rai, Khanna Pub.

**Web Resources:**

W1: https://en.wikipedia.org/wiki/Solar\_System

W2: https://en.wikipedia.org/wiki/Wind

W3: https://en.wikipedia.org/wiki/Tidal\_power

W4: <https://en.wikipedia.org/wiki/Geothermal_energy>

W5: <https://en.wikipedia.org/wiki/Biomass>

W6: http://www.eolss.net/sample-chapters/c08/e3-08-01-04.pdf

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Faculty Name: G.Satish**

**Subject: RENEWABLE ENERGY SOURCES (EE-416/1)**

**Year / Sem : IV/IV B.Tech, I SEM**

**Objectives**

1. Understand the Solar and Wind energy Sources
2. Recognize the need of renewable energy technologies and their role in the India and World energy demand
3. Gain knowledge on Renewable wave ocean and biomass energy
4. Model renewable electrical energy systems for analysis and design
5. Perform basic assessment and design of a renewable electrical energy system for a given application

**COURSE OUTCOMES:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  | | --- | | **C416.1**: Ability to Apply Engineering fundamentals to analysis and solve Engineering problems with a focus to meet the increasing energy Demand. **(Apply)**  **C416.2:** Ability to identify and organize process having higher priority for Environment conditions **(Understand)**  **C416.3:** Ability to Understand impact of the professional Engineering Problems in environmental contexts and demonstrate the need for sustainable development. **(Understand)** | |  | |  | |  | |
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Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Faculty Name: G.Satish**

**Subject: RENEWABLE ENERGY SOURCES (EE-416/1)**

**Year / Sem : IV/IV B.Tech, I SEM**

**COURSE OUTCOMES:**

**C416.1**: Ability to Apply Engineering fundamentals to analysis and solve Engineering problems with a focus to meet the increasing energy Demand. **(Apply)**

**C416.2:** Ability to identify and organize process having higher priority for Environment conditions **(Understand)**

**C416.3:** Ability to Understand impact of the professional Engineering Problems in environmental contexts and demonstrate the need for sustainable development. **(Understand)**

***Indicate strength of mapping (1/2/3) with justification***

* CO416.1 is focused on Apply Skill (PO1) and Mapped with PSO2. The weights are PO1(3),PSO2(2).
* CO416.2 is focused on Environment and sustainability skill(PO7) and mapped with PSO3. The weights are PO7(3), PSO3(2)
* CO3 is focused on Engineer and Society skill(PO6), mapped with PSO3. The weights are PO6(3),PSO3(2).

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Faculty Name: G.Satish**

**Subject: RENEWABLE ENERGY SOURCES (EE-416/1)**

**Year / Sem : IV/IV B.Tech, I SEM**

**MAPPING COS WITH POS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **C416.1** | 3 |  |  |  |  |  |  |  |  |  |  |  |
| **C416.2** |  |  |  |  |  |  | 3 |  |  |  |  |  |
| **C416.3** |  |  |  |  |  | 3 |  |  |  |  |  |  |
| **C416** | 3 |  |  |  |  | 3 | 3 |  |  |  |  |  |

1. **Low 2. Medium 3. High**

**MAPPING COS WITH PSOS**

|  |  |  |  |
| --- | --- | --- | --- |
| **CO** | **PSO1** | **PSO2** | **PSO3** |
| C416.1 |  | 2 |  |
| C416.2 |  |  | 2 |
| C416.3 |  |  | 2 |
| C416 |  | 2 | 2 |

Signature of the Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

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| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**Class Time Tables:**

Signature of the Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

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| --- | --- | --- |
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**Faculty Work Load**

Signature of the Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

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**Lesson Plane**

|  |  |  |  |
| --- | --- | --- | --- |
| **SL. No** | **Name of the Topic** | **Reference Book** | **Delivery Method** |
| 1 | Introduction to Principle of Renewable Energy | T1(1-4) | Chalk & Talk |
| 2 | Renewable energy sources, Coal Energy conversion | T1(7) | Chalk & Talk& Video Lecture |
| 3 | Non-Conventional energy sources | T1(8) | PPT |
| 4 | Comparison of renewable and conventional energy Sources | T1(5) | Chalk & Talk |
| 5 | Ultimate energy sources on earth | T1(8) | Chalk & Talk |
| 6 | Natural energy currents on earth | T1(8-9) | Chalk & Talk |
| 7 | Conventional energy sources | T1(10-11) | PPT |
| 8 | Spaghetti & Pie diagrams | T1(10-11) | Chalk & Talk |
| 9 | Energy planning | T1(11) | Chalk & Talk |
| 10 | Energy efficiency | T1(12) | Chalk & Talk |
| 11 | Energy management. | T1(12) | Chalk & Talk |
| 12 | Introduction Solar Radiation | R2(47-49) | Chalk & Talk |
| 13 | Extra-terrestrial solar radiation | R2(49-50), W1 | Chalk & Talk |
| 14 | Terrestrial solar radiation | R2(49-50) | Chalk & Talk |
| 15 | Solar thermal conversion | R2(73-76) | Chalk & Talk |
| 16 | Flat plate collectors | R2(76-81) | Chalk & Talk |
| 17 | Concentrating collectors | R2(102-103) | Chalk & Talk |
| 18 | Line focusing collectors | R2(103-105) | Chalk & Talk |
| 19 | Mirror strip reflector | R2(105) | Chalk & Talk |
| 20 | Fresnel lens collector | R2(105) | Chalk & Talk |
| 21 | Point focusing collector | R2(107-109) | Chalk & Talk |
| 22 | Compound parabolic concentrator | R2(110-111) | Chalk & Talk |
| 23 | Advantages of concentrating collectors | R2(111-112) | Chalk & Talk |
| 24 | Solar thermal electric conversion system | R2(168-170) | Chalk & Talk |
| 25 | Low temperature system -Solar pond | R2(170-172) | Chalk & Talk |
| 26 | Medium temperature system | R2(172-173) | Chalk & Talk |
| 27 | Solar thermal central receiver systems | R2(173-177) | Chalk & Talk |
| 28 | Photovoltaic energy conversion | R2(178-180) | PPT |
| 29 | Solar cells | R2(180-183) | Chalk & Talk |
| 30 | Photo voltaic systems for power generation | R2(188-192) | Chalk & Talk |
| 31 | Advantages of Photo voltaic systems | R2(192-193) | Chalk & Talk |
| 32 | Solar water heater model | R2(149-150) | Chalk & Talk |
| 33 | Solar distillation model | R2(195-197) | Chalk & Talk |
| 34 | Solar pumping model | R2(197-200) | Chalk & Talk |
| 35 | Solar furnace model | R2(200-202) | Chalk & Talk |
| 36 | Introduction to Wind energy | R2(228-230), W2 | Chalk & Talk |
| 37 | Planetary winds | R2(230-231) | Chalk & Talk |
| 38 | Local winds | R2(230-231) | Chalk & Talk |
| 39 | Vertical axis windmills | R2(277-283) | Chalk & Talk |
| 40 | Horizontal axis windmills | R2(263-267) | Chalk & Talk |
| 41 | Principles of wind power | R2(230-231) | Video Lecture |
| 42 | Power in the wind | R2(231-235) | Chalk & Talk |
| 43 | Maximum power | R2(235-239) | Chalk & Talk |
| 44 | Actual power | R2(231-235) | Chalk & Talk |
| 45 | Wind turbine operation | R2(256-259) | Chalk & Talk |
| 46 | Electrical generator,DFIG | R2(296-298) | Chalk & Talk PPT |
| 47 | Energy from Oceans | R2(495-497) | Chalk & Talk |
| 48 | Ocean temperature differences | R2(497-500) | Chalk & Talk |
| 49 | Principles of OTEC plant operations | R1(501-506) | PPT |
| 50 | Wave energy | R1(533-537) | Chalk & Talk |
| 51 | Devices for energy extraction | R1(537-542) | Chalk & Talk |
| 52 | Tidal energy | R2(510-516), W3 | Video Lecture |
| 53 | Simple single pool tidal system. | R2(521-524) | Chalk & Talk |
| 54 | Geothermal energy | R2(439-440), W4 | Video Lecture |
| 55 | Origin of Geothermal energy | R2(440-442) | Chalk & Talk |
| 56 | Types of Geothermal energy | R2(443-445) | Chalk & Talk |
| 57 | Biofuels | R2(315-316) | Chalk & Talk |
| 58 | Classification of Biofuels | R2(316-319), W5 | Chalk & Talk |
| 59 | Direct combustion for heat | W6 | Chalk & Talk |
| 60 | Direct combustion for heat and electricity generator | W6 | Chalk & Talk |
| 61 | Anaerobic digestion for biogas | R2(327-329) | Chalk & Talk |
| 62 | Biogas digester | R2(342-353) | Video Lecture |

**TEXT BOOKS**:

T1: Renewable Energy Sources by John Twidell & Toney Weir : E&F.N. Spon

T2: Renewable Energy Sources Their impact on global warming and pollutions by Abbasi & Abbasi-PHI

**REFERENCE BOOKS:**

R1: Power Plant Technology by EL-Wakil, Mc Graw-Hill

R2: Non-Conventional Energy Sources by G.D.Rai, Khanna Pub.

**Web Resources:**

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W2: https://en.wikipedia.org/wiki/Wind

W3: https://en.wikipedia.org/wiki/Tidal\_power

W4: <https://en.wikipedia.org/wiki/Geothermal_energy>

W5: <https://en.wikipedia.org/wiki/Biomass>

W6: <http://www.eolss.net/sample-chapters/c08/e3-08-01-04.pdf>

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**Gap With in the Syllabus**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl.No** | |  | | --- | | **Description** | |  | | |  | | --- | | **Source for Discussion** | | |  | | --- | | **Relevance with COs** | | |  | | --- | | **Relevance with PSOs** | |
| 1 | DFIG | WEB | C416.3 | PSO1 |

**Topic Mapping with POs**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| Working Operation of DFIG | - | - | - | - | - | - |  | - | - |  | - | - |

***Indicate strength of mapping (1/2/3) with justification***

* Working operation of DFIG is focused on Understand Skill. Blooms level it is not Mapped with any PO.

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**List of topics beyond syllabus**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **Topic** | |  | | --- | | **Source for Discussion** | | |  | | --- | | **Relevance with COs** | | |  | | --- | | **Relevance with PSOs** | |
| 1 | Types of Solar Panels and Efficiencies | Web | CO416.1 | PSO1 |

**Topic Mapping with POs**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| Types of Solar Panels and Efficiencies | - | | 3 | - | - | - | - | - | - | - | - | - | - |

***Indicate strength of mapping (1/2/3) with justification***

* Types of Solar Panels and analysis of their Efficiency is focused on Analysis Skill. It is Mapped with PO2 . And their weights are PO2(3).

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**Web Resources:**

W1: https://en.wikipedia.org/wiki/Solar\_System

W2: https://en.wikipedia.org/wiki/Wind

W3: https://en.wikipedia.org/wiki/Tidal\_power

W4: <https://en.wikipedia.org/wiki/Geothermal_energy>

W5: <https://en.wikipedia.org/wiki/Biomass>

W6: <http://www.eolss.net/sample-chapters/c08/e3-08-01-04.pdf>

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**UNIT WISE QUESTIONS**

**UNIT WISE QUESTIONS**

**Unit-I**

**Short Answer Questions:**

1. List few non-convectional energy resources.

**A:** Solar, Wind, Ocean, Bio-Gas and Bio-Mass etc

1. What are the main advantages of non-convectional energy sources

**A:** Pollution free, sustainable, cheaply available

1. Specify the three limitations of Renewable energy sources.

**A:** Initial cost is high, solar energy is available at day time only, Geothermal energy can bring toxic chemicals

1. What are the various non-convectional energy resources available for power production?

**A:** Solar, Wind, Ocean, Bio-gas and Bio-Mass, Geothermal Etc

1. Draw spaghetti diagram.
2. What is meaning of Renewable energy sources?

**A:‘**Energy obtained from natural and persistent flows of energy occurring in the immediate environment’. An obvious example is solar (sunshine) energy, where ‘repetitive’ refers to the 24-hour major period. Note that the energy is already passing through the environment as a *current* or *flow*, irrespective of there being a device to intercept and harness this power. Such energy may also be called *Green Energy* or *Sustainable Energy*.

1. Explain about energy planning
2. Explain the limitations of Renewable energy sources
3. Reliability, cost, efficiency, and storage etc

**Essay Questions:**

1. What is Energy Planning? What are the Prospects of India in this Regard?
2. Write a Brief note about Non Convectional Energy Sources? What is the importance of RES Energy?
3. Compare between RES with Convectional Energy sources
4. Write short notes on
   1. Primary supply to end Use
   2. Spaghetti Diagrams
5. Explain Ultimate Energy sources with a neat Sketch
6. Write short notes on Natural Current Energies on Earth.

**Unit-II**

**Short Answer Questions:**

1. What is solar pond?

**A:**  Heat trap equipment is called as Solar Pond.

1. What is beam radiation?

**A:**  which radiation is directly reaches to earth from extra-terrestrial region, that radiation is called as Beam radiation or direct radiation.

1. What is focusing type collector

**A:** Concentrating solar collectors use mirrors and lenses to concentrate and focus sunlight onto a thermal receiver

1. What are solar energy collectors

**A:** Flat plate collectors and focusing collectors

1. What are the advantages of focusing collectors

**A:**  Reflecting surface is less required, high temperature is obtain

1. What are the applications of solar energy

**A:**  Solar geysers, solar cookers, solar Furness, solar to electrical conversion etc

1. What is diffuse radiation

**A:**  Diffuse radiation is that solar radiation is scattered in all directions in the atmosphere, this will be comes to the earth from all parts of the sky.

1. What are the components of solar water heater

**A:** plat plate solar collector, absorber, insulation

1. Define term solar constant

**A:** The rate at which solar energy arrives at the top of the atmosphere is called the solar constant Isc.

1. What is meant by solar tracking?

**A:** Trackers direct solar panels or modules toward the sun. These devices change their orientation throughout the day to follow the sun's path to maximize energy capture.

1. Define solar radiation

**A:** Solar radiation is radiant energy emitted by the sun from a nuclear fusion reaction that creates electromagnetic energy.

1. Define solar azimuth angle.

**A:** it is the solar angle in degrees along the horizon east or west of north or it’s a horizontal angle measured from north to the horizontal projection of the sun’s rays.

1. What is photovoltaic system

**A:**  The energy conversion devices which are used to convert sunlight to electricity by the use of the photovoltaic effect are called solar cell (or) Photovoltaic system.

1. List the concentrating collectors

**A:** Parabolic trough collector, mirror strip reflector, Fresnel lens collector.

**Essay Questions:**

1. Write short notes on solar pumping and solar thermal central receiver systems
2. A) Explain extra-terrestrial and terrestrial solar radiation.

B) What are the advantages and disadvantages of concentrating collectors over a flat plate collectors?

1. Write short notes on
2. A) solar thermal central receiver system

B) Photovoltaic energy conversion

1. What is the principle of solar photovoltaic power generation? What are the main elements of a PV system?
2. Write short notes on any two applications of solar energy.

**Unit-III**

**Short Answer Questions:**

1. Define horizontal axis wind turbine and name any one such turbine

**A:** Horizontal-axis wind turbines (HAWT) have the main rotor shaft and electrical generator at the top of a tower, and must be pointed into the wind.

1. What is wind power

**A:** definition for a wind turbine is a type of device that transforms kinetic energy from the mainly from the wind into electric power

1. Define tip speed ratio

**A:** The ratio between the tangential speed of the tip of a blade and the actual speed of the wind

1. What is meant by pitch angle

**A:** The angle of climb (slope) is the angle between the horizontal axis and the turbine path

1. What is planetary wind

**A:** The winds blowing throughout the year from one latitude to another in response to latitudinal differences in air pressure are called “planetary or prevailing winds”

1. What are the types of wind mills

**A:** Horizontal wind mills and vertical wind mills.

1. What is the basic principle of wind energy conversion

**A:** Any device capable of slowing down the mass of moving air, like a sail or propeller, can extract part of the energy and convert is into useful work.

1. What are the basic components of wind energy conversion plant

**A:** Wind turbine, gear box, controller, generator etc.

1. How the wind mills are classified

**A:** The rotation of wind turbine they are classified Horizontal and vertical

1. What are the advantages of wind energy

**A:** Non-polluting, renewable energy, high efficiency conversion

1. Define vertical axis wind turbine

**A:** A vertical-axis wind turbines (VAWT) is a type of wind turbine where the main rotor shaft is set transverse to the wind (but not necessarily vertically) while the main components are located at the base of the turbine

1. Mention any two advantages of vertical axis turbine over horizontal axis turbine

**A:** rotor blades can accept the wind form any direction, elimination of yaw controller.

1. What is the cause of origin of local winds? Describe briefly

**A:**Local Winds blow over a much smaller area and change direction and speed over a shorter period

**Essay Questions:**

1. (a) State the essential features of a probable site for a wind form

(b) Write in brief about vertical axis wind mills

1. Explain different types of wind mills with merits, demerits and limitations.
2. Explain the terms maximum power and actual power.
3. Write short notes on
4. Principle of wind power
5. Wind turbine operation
6. With a neat diagram, explain how wind energy can be converted into electrical energy
7. Write short notes on

a) Horizontal type windmills.

b) Applications of wind energy

**Unit-IV**

**Short Answer Questions:**

1. List the advantages of bio-gas

**A:**Biogas is Eco-Friendly. Biogas is a renewable, as well as a clean, source of energy. Gas generated through bio digestion is non-polluting.

1. What is Geothermal energy

**A;** Generating electricity from the earth's heat. Geothermal Direct Use. Producing heat directly from hot water within the earth.

1. List the advantages of tidal energy

**A:** It is also a cheap energy source. After the initial investment is paid off, the cost of generating electricity is very low. Tidal energy has a high energy density, meaning that the tides store a larger amount of energy than most other forms of renewable energy

1. List the advantages of ocean wave energy

**A:** Capable of high efficiency (60-80%) in ideal conditions. \* Renewable energy source obtained by wind via the Sun's heating of our atmosphere. \* Minimal environmental impact when properly placed.

1. What is digester

**A:** Anaerobic digestion is a collection of processes by which microorganisms break down biodegradable material in the absence of oxygen.

1. What is meant by bio-mass

**A:** Biomass is an industry term for getting energy by burning wood, and other organic matter

1. List out the geothermal resources

**A:** Earth internal heat, Hot water in depth of earth

1. What are the disadvantages of geothermal energy

**A:** Potential emissions – Greenhouse gas below Earth's surface can potentially migrate to the surface and into the atmosphere. ...

Surface Instability – Construction of geothermal power plants can affect the stability of land

1. Define the term Tides

**A:** The periodic rise and fall of the waters of the ocean and its inlets, produced by the attraction of the moon and sun, and occurring about every 12 hours.

1. What are the advantages and disadvantages of ocean wave energy

**A:** heating buildings (either individually or whole towns), raising plants in greenhouses, drying crops, heating water at fish farms, and several industrial processes, such as pasteurizing milk.

1. What is meant by fermentation

**A:** Fermentation is a metabolic process that consumes [sugar](https://en.wikipedia.org/wiki/Sugar) in the absence of oxygen.

1. What is the difference between biomass and biogas

**A:** Biomass is a term for any biological material. It refers to a waste or by product almost exclusively, and usually for a combustible by product used for energy. Tree bark, sawdust, spent sugar cane, rice hulls, etc. Biogas refers to the gas produced when biomass breaks down.

**Essay Questions:**

1. Classify the bio-gas plant and write about each of them with neat sketch
2. Compare OTEG with Wave energy. Prepare a comparative list of their merits and demerits
3. Write short notes on
4. Principle of OTEC plant operation
5. Bio-gas digester
6. Write short notes on
7. Devices for energy extraction
8. Bio-fuels
9. What is geothermal energy? List out the geothermal regions in india
10. Explain pyrolysis process to generate biogas from biomass. Also specify advantages and disadvantages
11. Explain the various methods of tidal power generation with a conceptual diagram? What are the limitations

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**List of ICTs used**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.no** | **Date** | **Topic** | **ICT** |
| 1 | 1-Aug-2018 | Renewable energy sources, Coal Energy conversion | LCD projector and PC |
| 2 | 7-Aug-2018 | Conventional energy sources | LCD projector and PC |
| 3 | 11-Aug-2018 | Non-Conventional energy sources | Video Lecture |
| 4 | 4-Sep-2018 | Photovoltaic energy conversion | LCD projector and PC |
| 5 | 25-Sep-2018 | Principles of wind power | Video Lecture |
| 6 | 14-Oct-2018 | DFIG | LCD projector and PC |
| 7 | 24-Oct-2018 | Principles of OTEC plant operations | LCD projector and PC |
| 8 | 30-Oct-2018 | Tidal energy | Video Lecture |
| 9 | 1-Nov-2018 | Geothermal energy | Video Lecture |
| 10 | 17-Nov-2018 | Biogas digester | Video Lecture |
| 11 | At starting Course | All Course | Lecture Notes |

Signature of Faculty

(Mr.G.Satish)



|  |  |  |
| --- | --- | --- |
| Class : **IV/IV B.Tech** | **I Mid-term Examinations** | Date : 28/08/2019 |
| Branch **: ECE-A** | **RENEWABLE ENERGY SOURCES** | Time : **90 Min** |
| Sub Code : **EE-416/1** |  | Max.Marks :**18** |

**SECTION-A**

**Answer All Questions: (6 x 1 = 6 M)**

1. a) what are the advantages of non-convectional energy sources(PO 1,6,7) (CO 1,2,3) **(Understand)**

b) List the limitations of Renewable Energy sources(PO 1,6,7) (CO 1,2,3) **(Understand)**

c) List few non convectional Energy sources(PO 1,6,7) (CO 1,2,3)**(Understand)**

d) What is diffuse Radiation (PO 1,6,7) (CO 1,2,3) **(Understand)**

e) What are the solar energy collectors (PO 1,6,7) (CO 1,2,3) **(Understand)**

f) List the types of concentrating collectors(PO 1,6,7) (CO 1,2,3) **(Understand)**

**SECTION-B (6\*1=6 M)**

1. Write short notes on Natural Energy currents on Earth. (PO 1,6,7) (CO 1,2,3)  **(Apply)**

**(OR)**

1. Compare between RES with Convectional Energy sources(PO 1,6,7) (CO 1,2,3) (**Apply)**

**SECTION-C (6\*1=6 M)**

1. What are the advantages and disadvantages of concentrating collectors over a flat plate collectors? (PO 1,6,7) (CO 1,2,3) **(Understand)**

**(OR)**

1. Explain extra-terrestrial and terrestrial solar radiation. (PO 1,6,7) (CO 1,2,3) **(Understand)**

Signature of Faculty

(Mr.G.Satish)



|  |  |  |
| --- | --- | --- |
| Class : **IV/IV B.Tech** | **II Mid-term Examinations** | Date : 07/11/2019 |
| Branch **: ECE-A** | **RENEWABLE ENERGY SOURCES** | Time : **90 Min** |
| Sub Code : **EE-416/1** |  | Max.Marks :**18** |

**SECTION-A**

**Answer All Questions: (6 x 1 = 6 M)**

1. a) What are the types of wind mills (PO 1,6,7) (CO 1,2,3) **(Remembering)**

b) What are the advantages of wind energy(PO 1,6,7) (CO 1,2,3) **(Remembering)**

c) Define tip speed ratio(PO 1,6,7) (CO 1,2,3) **(Remembering)**

d) List the advantages of bio-gas(PO 1,6,7) (CO 1,2,3) **(Remembering)**

e) What is digester (PO 1,6,7) (CO 1,2,3) **(Remembering)**

f) List out the geothermal resources (PO 1,6,7) (CO 1,2,3) **(Remembering)**

**SECTION-B (6\*1=6 M)**

1. Sketch how wind energy can be converted into electrical energy (PO 1,6,7) (CO 1,2,3) (**Applying)**

**(OR)**

1. Write short notes on (PO 1,6,7) (CO 1,2,3) **(Applying)**

a) Horizontal type wind mills.

b) Applications of wind energy

**SECTION-C (6\*1=6 M)**

1. Write short notes on (PO 1,6,7) (CO 1,2,3) **(Applying)**
2. Principle of OTEC plant operation
3. Bio-gas digester

**(OR)**

1. Classify the bio-gas plant and write about each of them with neat sketch? (PO 1,6,7) (CO 1,2,3)

(**Understand)**



|  |  |  |
| --- | --- | --- |
| Class : **IV/IV B.Tech** | **Assignment-I** | Date : 28/08/2019 |
| Branch **: ECE-A** | **RENEWABLE ENERGY SOURCES** |  |
| Sub Code : **EE-416/1** |  | Max.Marks :**12** |

1. Compare between RES with Convectional Energy sources (PO 1,6,7) (CO 1,2,3) (**Analyse**)
2. Explain Ultimate Energy sources with a neat Sketch (PO 1,6,7) (CO 1,2,3) (**Understand)**
3. What are the advantages and disadvantages of concentrating collectors over flat plate collectors. (PO 1,6,7) (CO 1,2,3) **(Understand)**
4. Explain about extra-terrestrial and terrestrial solar radiations (PO 1,6,7) (CO 1,2,3) (**Understand)**
5. What is Energy Planning? What are the Prospects of India in this Regard?(PO 1,6,7) (CO 1,2,3) **(Understand)**
6. List and explain various types of concentrating collectors with a neat sketch. (PO 1,6,7) (CO 1,2,3) **(Understand)**

Signature of Faculty

(Mr.G.Satish)



|  |  |  |
| --- | --- | --- |
| Class : **IV/IV B.Tech** | **Assignment-II** | Date : 07/11/2019 |
| Branch **: ECE-A** | **RENEWABLE ENERGY SOURCES** |  |
| Sub Code : **EE-416** |  | Max.Marks :**12** |

1. (a) Write the essential features of a probable site for a wind form(PO 1,6,7) (CO 1,2,3) **(Applying)**

(b) Discuss in brief about vertical axis wind mills (PO 1,6,7) (CO 1,2,3) **(Understand)**

1. Explain different types of wind mills with merits, demerits and limitations

(CO 1,2,3) (PO 1,6,7) (**Understand)**

1. Classify the bio-gas plant and write about each of them with neat sketch (PO 1,6,7)(CO 1,2,3) **(Understand)**
2. Write short notes on (CO 1,2,3) (PO 1,6,7) **(Applying)**
3. Principle of wind power
4. Wind turbine operation
5. Sketch how wind energy can be converted into electrical energy (PO 1,6,7) (CO 1,2,3) **(Applying)**
6. Write short notes on (PO 1,6,7) (CO 1,2,3) **(Applying)**

a) Horizontal type wind mills.

b) Applications of wind energy

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**Internal Question Papers Mapped with CO**

**Mid-I EXAMINATION**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q 1** | **Question** | **Marks** | **CO** | **PO** | **PSO** | **Bloom’s Level** | **Marks Weightage** | **% of Marks** |
| 1 | what are the advantages of non-convectional energy sources | 1M | C416.1,2,3 | 1,6,7 | 3 | L2 | 1/30 | 3.3% |
| List the limitations of Renewable Energy sources | 1M | C416.1,2,3 | 1,6,7 | 3 | L2 | 1/30 | 3.3% |
| List few non convectional Energy sources | 1M | C416.1,2,3 | 1,6,7 | 3 | L2 | 1/30 | 3.3% |
| What is diffuse Radiation | 1M | C416.1,2,3 | 1,6,7 | 3 | L2 | 1/30 | 3.3% |
| What are the solar energy collectors | 1M | C416.1,2,3 | 1,6,7 | 3 | L2 | 1/30 | 3.3% |
| List the types of concentrating collectors | 1M | C416.1,2,3 | 1,6,7 | 3 | L2 | 1/30 | 3.3% |
| 2 | Write short notes on Natural Current Energies on Earth | 6M | C416.1,2,3 | 1,6,7 | 3 | L3 | 6/30 | 20% |
| 3 | Compare between RES with Convectional Energy sources | 6M | C416.1,2,3 | 1,6,7 | 3 | L3 | 6/30 | 20% |
| 4 | What are the advantages and disadvantages of concentrating collectors over a flat plate collectors? | 6M | C416.1,2,3 | 1,6,7 | 3 | L2 | 6/30 | 20% |
| 5 | Explain extra-terrestrial and terrestrial solar radiation | 6M | C416.1,2,3 | 1,6,7 | 3 | L2 | 6/30 | 20% |

**Mid-II EXAMINATION**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q 1** | **Question** | **Marks** | **CO** | **PO** | **PSO** | **Bloom’s Level** | **Marks Weightage** | **% of Marks** |
| 1 | What are the types of wind mills | 1M | C416.1,2,3 | 1,6,7 | 1 | L2 | 1/30 | 3.3% |
| What are the advantages of wind energy | 1M | C416.1,2,3 | 1,6,7 | 1 | L1 | 1/30 | 3.3% |
| Define tip speed ratio | 1M | C416.1,2,3 | 1,6,7 | 1 | L1 | 1/30 | 3.3% |
| List the advantages of bio-gas | 1M | C416.1,2,3 | 1,6,7 | 1 | L1 | 1/30 | 3.3% |
| What is digester | 1M | C416.1,2,3 | 1,6,7 | 1 | L1 | 1/30 | 3.3% |
| List out the geothermal resources | 1M | C416.1,2,3 | 1,6,7 | 1 | L1 | 1/30 | 3.3% |
| 2 | Sketch how wind energy can be converted into electrical energy | 6M | C416.1,2,3 | 1,6,7 | 1 | L3 | 6/30 | 20% |
| 3 | Write short notes on  a) Horizontal type wind mills.  b) Applications of wind energy | 6M | C416.1,2,3 | 1,6,7 | 1 | L3 | 6/30 | 20% |
| 4 | Write short notes on   1. Principle of OTEC plant operation 2. Bio-gas digester | 6M | C416.1,2,3 | 1,6,7 | 1 | L3 | 6/30 | 20% |
| 5 | Classify the bio-gas plant and write about each of them with neat sketch? | 6M | C416.1,2,3 | 1,6,7 | 1 | L2 | 6/30 | 20% |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**Assignment Question Papers Mapped with CO**

**Assignment-I**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q.No** | **Question** | **Marks** | **CO** | **PO** | **PSO** | **Bloom’s Level** | **Marks** | **% of Marks** |
| 1 | Compare between RES with Convectional Energy sources | 12 | C416.1,2,3 | 1,6,7 | 3 | L3 | 12/72 | 16.6% |
| 2 | Explain Ultimate Energy sources with a neat Sketch | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |
| 3 | What are the advantages and disadvantages of concentrating collectors over flat plate collectors. | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |
| 4 | Explain about extra-terrestrial and terrestrial solar radiations | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |
| 5 | What is Energy Planning? What are the Prospects of India in this Regard? | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |
| 6 | List and explain various types of concentrating collectors with a neat sketch. | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |

**Assignment-II**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q.No** | **Question** | **Marks** | **CO** | **PO** | **PSO** | **Bloom’s Level** | **Marks** | **% of Marks** |
| 1 | (a) Write the essential features of a probable site for a wind form | 6 | C416.1,2,3 | 1,6,7 | 3 | L3 | 6/72 | 8.3% |
| (b) Discuss in brief about vertical axis wind mills | 6 | C416.1,2,3 | 1,6,7 | 3 | L2 | 6/72 | 8.3% |
| 2 | Explain different types of wind mills with merits, demerits and limitations | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |
| 3 | Classify the bio-gas plant and write about each of them with neat sketch | 12 | C416.1,2,3 | 1,6,7 | 3 | L2 | 12/72 | 16.6% |
| 4 | Write short notes on   1. Principle of OTEC plant operation 2. Bio-gas digester | 12 | C416.1,2,3 | 1,6,7 | 3 | L3 | 12/72 | 16.6% |
| 5 | Sketch how wind energy can be converted into electrical energy | 12 | C416.1,2,3 | 1,6,7 | 3 | L3 | 12/72 | 16.6% |
| 6 | Write short notes on  a) Horizontal type wind mills.  b) Applications of wind energy | 12 | C416.1,2,3 | 1,6,7 | 3 | L3 | 12/72 | 16.6% |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATON ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G. SATISH | Year / Sem: B.Tech in ECE - IV/I | Academic Year: 2019-20 |

**Scheme of Evaluation of Internal Question Papers**

**MID-I**

**SECTION-A 6\*1=6M**

|  |  |
| --- | --- |
| 1. a) What are the advantages of non-convectional energy sources |  |
| * Any 3 advantages of Renewable Energy sources | **1M** |
| b) List the limitations of Renewable Energy sources |  |
| * List any 3 Limitations of RES | **1M** |
| c) List few non convectional Energy sources |  |
| * List any 4 Non convectional energy sources | **1M** |
| d)What is Diffuse Radiation |  |
| * Definition of Diffuse Radiation | **1M** |
| e) What are Solar Energy Collectors? |  |
| * Mention Two type of solar collectors names | **1M** |
| f) List the types of concentrating collectors |  |
| * Mention 5 types of Concentrating collectors | **1M** |

**SECTION-B 1\*6=6M**

|  |  |
| --- | --- |
| 2. Write short notes on Natural energy currents on Earth. |  |
| * Diagram of Natural Current Energies | **2M** |
| * Brief explanation of Natural energy currents | **4M** |
| 3. Compare between RES with Convectional Energy sources |  |
| * Any 10 comparisons between convectional and non-convectional energy sources | **6M** |

**SECTION-C 1\*6=6M**

|  |  |
| --- | --- |
| 4. What are the advantages and disadvantages of concentrating collectors over flat plate collectors? |  |
| * 5 Advantages | **3M** |
| * 5 Disadvantages | **3M** |
| 5. Explain extra terrestrial and terrestrial solar radiation. |  |
| * Explanation about extra terrestrial radiation | **3M** |
| * Explanation about terrestrial radiation | **3M** |

**MID-II**

**SECTION-A 6\*1=6M**

1. (a) What are the types of wind mills

* Two types of wind mills **1M**

(b) What are the advantages of wind energy

* Any 4 advantages of wind energy **1M**

(c) Define tip speed ratio

* Definition of tip speed ratio **1M**

(d) List the advantages of bio-gas

* Mention any 4 advantages of biogas **1M**

(e) What is digester

* Definition of digester **1M**

(f) What is geothermal resources

* Definition of geothermal energy **1M**

**SECTION-B 1\*6=6M**

2. Sketch how wind energy can be converted into electrical energy

* Neat diagram of wind energy conversion and explanation 6M

1. Write short notes on

a) Horizontal type wind mills.

b) Applications of wind energy

* List all types of Horizontal type wind mills **1M**
* Explain any one of them **2M**
* Explain about Wind to Electrical and Wind to Pumping **3M**

**SECTION-C 1\*6=6M**

1. Write short notes on
2. Principle of OTEC plant operation
3. Bio-gas digester

* Principle of OTEC **3M**
* Bio-gas digester with neat diagram **3M**

1. Classify the bio-gas plant and write about each of them with neat sketch?

* List different types of bio gas plants **1M**
* Explain any one with neat diagram **5M**



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G. SATISH | Year / Sem: B.Tech in ECE - IV/I | Academic Year: 2019-20 |

**Scheme of Evaluation of Assignment Question Papers**

**ASSIGNMENT-1**

|  |  |
| --- | --- |
| 1. Compare between RES with Convectional Energy sources. |  |
| * 10 comparisons between RES and Non RES | **6M** |
| 2. Explain Ultimate Energy sources with a neat Sketch |  |
| * Diagram of Ultimate Energy sources | **3M** |
| * Brief explanation of Ultimate energy sources | **3M** |
| 3. What are the advantages and disadvantages of concentrating collectors over flat plate collectors? |  |
| * 5 Advantages | **3M** |
| * 5 Disadvantages | **3M** |
| 4. Explain extra terrestrial and terrestrial solar radiation. |  |
| * Explanation about extra terrestrial radiation | **3M** |
| * Explanation about terrestrial radiation | **3M** |
| 5. What is Energy Planning? What are the Prospects of India in this Regard? |  |
| * Definition and 4 important points carries | **3M** |
| * Energy planning in India | **3M** |
| 6. List and explain various types of concentrating collectors with a neat sketch. |  |
| * 6 different types of collectors | **6M** |

**ASSIGNMENT-II 1\*12=12**

1. (a) State the essential features of a probable site for a wind form

(b) Write in brief about vertical axis wind mills

* Any 6 essential features of probable site for a wind form. **6M**
* Different types of Vertical axis wind mills **3M**
* Explain any one with neat diagram. **3 M**

1. Explain different types of wind mills with merits, demerits and limitations.

* List total types of wind mill **2M**
* Write any 4 Merits and any 4 Demerits and any 4 Limitations **10M**

1. Explain the terms maximum power and actual power.

* Derivation of Maximum power in Wind turbine. **12M**

1. Write short notes on
2. Principle of wind power
3. Wind turbine operation

* Explanation of crest and trust power and working principle **6M**
* Wind turbine operation **6M**

1. With a neat diagram, explain how wind energy can be converted into electrical energy

* Block diagram of wind to electrical energy conversion with neat **4M**
* Explanation of each part **8M**

1. Write short notes on

a) Horizontal type wind mills.

b) Applications of wind energy

* List all types of Horizontal type wind mills **2M**
* Explain any one of them **4M**
* Explain about Wind to Electrical and Wind to Pumping **6M**

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**RESULTS ANALYSIS FOR FINDING SLOW AND FAST LEARNERS**

Total number of candidates: 42

**LEVEL-I**

**RESULT ANALYSIS OF PREREQUISITE SUBJECT**

**AC MACHINES (EE-226)**

**II/IV B.Tech II-Sem (R-15) A.Y 2016-17**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL.NO** | **TOTAL NO OF STUDENTS** | **APPERED** | **PASSED** | **ABOVE 80%** | **SLOW LEARNERS (41-59%)** | **FAIL** |
| 1 | 42 | 41 | 40 | 1 | 3 | 1 |

**LIST OF STUDENTS UNDER –Slow Learners (41-59%) in PREREQUISITE SUBJECT:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Roll.No** | **Reg.No** | **Name of the Student** | **Obtained Grade** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**LIST OF STUDENTS UNDER –Fast Learners (Above 80%) in PREREQUISITE SUBJECT:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Roll.No** | **Reg.No** | **Name of the Student** | **Obtained Grade** |
| 3 | Y15EE1207 | BOGINENI PRIYANKA | A+ |

**Questions given for slow learners in Prerequisite Subject:**

1. (a) Derive an Expression for the EMF developed by Alternator

(b) Define the terms of synchronous reactance and Voltage Regulation of alternator.

**REMEDIAL ACTION:** Weekly one question Discussion, learning and writing process. Spot evaluation.

**LEVEL-II**

**RESULT ANALYSIS OF PREVIOUS SEMISTER**

**II/IV B.Tech II-Sem (R-15) A.Y 2016-17**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SL.NO** | **TOTAL NO OF STUDENTS** | **APPERED** | **PASSED** | **ABOVE 80%** | **FAIL** |
| 1 | 42 | 41 | 16 | 2 | 25 |

**LIST OF STUDENTS UNDER –Slow Learners (Fail) in University Exam**

|  |  |  |  |
| --- | --- | --- | --- |
| **Roll.No** | **Reg.No** | **Name of the Student** | **Obtained Grade** |
| 1 |  |  |  |
| 2 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| 12 |  |  |  |
| 15 |  |  |  |
| 16 |  |  |  |
| 21 |  |  |  |
| 22 |  |  |  |
| 24 |  |  |  |
| 25 |  |  |  |
| 26 |  |  |  |
| 28 |  |  |  |
| 29 |  |  |  |
| 31 |  |  |  |
| 32 |  |  |  |
| 33 |  |  |  |
| 34 |  |  |  |
| 38 |  |  |  |
| 39 |  |  |  |
| 42 |  |  |  |

**LIST OF STUDENTS UNDER –Fast Learners (Above 80%) in University Exam**

|  |  |  |  |
| --- | --- | --- | --- |
| **Roll.No** | **Reg.No** | **Name of the Student** | **Obtained Grade** |
| 11 | Y15EE1224 | SHAIK GOUSE BI | A+ |
| 20 | L16EE1230 | BRUNDAVANAM SASANK VENKATAKRISHNA SAI | A+ |

**LEVEL-III**

**RESULT ANALYSIS OF ASSIGNMENT AND MID EXAMS**

**III/IV B.Tech I-Sem (R-15) A.Y 2019-20**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SUB: S&SM** | M1 | A1 | M2 | A2 | **INTERNAL** |
| Students who have attended |  |  |  |  |  |
| Students who are qualified |  |  |  |  |  |
| Students not qualified |  |  |  |  |  |
| Students who are fast learners (>85%) |  |  |  |  |  |
| Students who are medium learners (>60 %&< 84%) |  |  |  |  |  |
| Students who are slow learners (>36 %&< 59%) |  |  |  |  |  |
| Students who are Not Qualified (<35%) |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EVALUATION** | | | | |
|  | **MID MARKS (18)** | **ASSIGNMENT**  **MARKS (12)** | **PERCENTAGE** |
| **FAST LEARNERS** | **16-18** | **11-12** | **above 85-100%** |
| **MEDIUM LEARNERS** | **11-15** | **7-9** | **above 60-84%** |
| **SLOW LEARNERS** | **8-10** | **5-6** | **Above 41-59%** |
| **NOT QUALIFIED** | **0-7** | **1-4** | **below 40%** |

**LIST OF STUDENTS UNDER – SLOW LEARNERS (<59%) IN A1**

| **Roll No’s** | **Regd. Number** | **Name of the student** | **Marks** |
| --- | --- | --- | --- |
| 1 | Y16EC1201 | A.RAMYA SITA | 6 |
| 2 | Y16EC1204 | A. NAGA SWARNALATHA | 0 |
| 3 | Y16EC1206 | A.LAKASHMI JYOTHSNA | 0 |
| 4 | Y16EC1208 | A.SUSHMA | 4 |
| 5 | Y16EC1213 | B.VENKATA GAYATHRI | 3 |
| 6 | Y16EC1214 | B.JANSI RANI | 1 |
| 7 | Y16EC1217 | B.THANMAI REDDY | 6 |
| 8 | Y16EC1218 | B.SRAVANA LAKSHMI | 5 |
| 9 | Y16EC1220 | B.PRAVEENA | 1 |
| 10 | Y16EC1223 | CH.LAVANYA | 6 |
| 11 | Y16EC1224 | CH SAI NAGA LAKSHMI | 6 |
| 12 | Y16EC1228 | D. SIVA PARVATHI | AB |
| 13 | Y16EC1246 | J.PUJITHA | 1 |
| 14 | Y16EC1255 | K.LAKSHMI DINFHU | 1 |
| 15 | Y16EC1256 | K.PRAVALLIKA | 4 |
| 16 | Y16EC1259 | M.LOKESWARI | 5 |
| 17 | Y16EC1260 | M.THIRUMALAGIRI SOWJANAYA | 2 |
| 19 | Y16EC1265 | M.BHAGYA LAKSHMI | 5 |
| 20 | Y16EC1268 | N.LAKSHMI DURGA | 1 |
| 23 | Y16EC1295 | T.VENKATESWARI | 1 |
| 24 | Y16EC1300 | V.MOUNIKA |  |
| 25 | Y16EC1202 | A.VENKATESH | AB |
| 26 | Y16EC1203 | A.LOKESH KUMAR | 1 |
| 27 | Y16EC1205 | A. PAVAN KUMAR | 3 |
| 28 | Y16EC1207 | A.DURGA KOTESWARA RAO | 3 |
| 29 | Y16EC1209 | B.VENKATASIVA SAI TEJA | AB |
| 30 | Y16EC1210 | B.JASHUVA | 1 |
| 31 | Y16EC1211 | B.NAVEEN KUMAR | AB |
| 32 | Y16EC1212 | B.JAGADESH | 0 |
| 33 | Y16EC1215 | B.GURU KRISHNA PRASAD | 0 |
| 34 | Y16EC1216 | B.VENKATA NARSI REDDY | 2 |
| 35 | Y16EC1222 | CH. VISHNU VARDHAN | 1 |
| 36 | Y16EC1225 | CH.NAVEEN TEJA | 3 |
| 37 | Y16EC1226 | CH .MANOHAR KRISHNA | 1 |
| 38 | Y16EC1227 | CH.AMAR | AB |
| 39 | Y16EC1229 | D. SIVA SANKAR | 4 |
| 41 | Y16EC1233 | D.SIVA NAGA RAJU | 5 |
| 42 | Y16EC1234 | D.SAI PRAKSH REDDY | 4 |
| 43 | Y16EC1235 | G.CHAITANYA | 0 |
| 44 | Y16EC1237 | G.RAGAVENDRA NAIDU | 1 |
| 45 | Y16EC1238 | G.PRASAD | 0 |
| 46 | Y16EC1239 | G.SRINIVAS | 1 |
| 47 | Y16EC1240 | G.SIVA | 3 |
| 48 | Y16EC1241 | G.SURESH | 5 |
| 49 | Y16EC1243 | G.JOSEPH KISHORE | 0 |
| 50 | Y16EC1245 | J.SUMANTH | 1 |
| 51 | Y16EC1248 | J.SAI RAJEEV | 0 |
| 52 | Y16EC1252 | K.VISHNU VARDAN BABU | 0 |
| 53 | Y16EC1263 | MANOJ KUMAR .Y | AB |
| 54 | Y16EC1284 | P.RAMA KRISHNA | 0 |
| 56 | Y16EC1292 | S.BHARGAV | 0 |

**LIST OF STUDENTS UNDER –** **MEDIUM LEARNERS (>60% TO <84%) IN A1**

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** |
| 6 | Y15EE1219 | MUTHYALA TEJA SRI | 8 |
| 7 | Y15EE1220 | NANDIGAM DIVYA | 8 |
| 13 | L16EE1228 | ANKAMSETTI NAGA RAJU | 9 |
| 17 | Y15EE1208 | BOMMISETTI GOPI | 9 |
| 18 | L16EE1229 | BONAM SRINIVASA REDDY | 8 |
| 39 | L16EE1242 | UPPALAPATI VENKATESH | 8 |
| 40 | L16EE1243 | VELLABATI SUNIL KUMAR | 9 |

**LIST OF STUDENTS UNDER – SLOW LEARNERS (<59%) IN M1**

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** |
| 3 | Y15EE1209 | CHENNUPATI KALYANI | 9 |
| 7 | Y15EE1220 | NANDIGAM DIVYA | 10 |
| 8 | Y15EE1221 | NELLURI RENUKA | 0 |
| 9 | Y15EE1222 | PALLEPOGU DIVYA | 0 |
| 11 | Y15EE1225 | SHAIK SHAHIRA BEGUM | 1 |
| 12 | Y15EE1202 | ANKAM RAJESH | 10 |
| 13 | L16EE1228 | ANKAMSETTI NAGA RAJU | 7 |
| 14 | Y15EE1204 | BANKA JAGADEESH | 1 |
| 15 | Y15EE1205 | BELLAM GOPI | 9 |
| 16 | Y15EE1206 | BHAVIRISETTY NAGENDRA BABU | 5 |
| 17 | Y15EE1208 | BOMMISETTI GOPI | 10 |
| 18 | L16EE1229 | BONAM SRINIVASA REDDY | 7 |
| 23 | Y15EE1210 | CHITTINENI GOPALA KRISHNA | 0 |
| 24 | Y15EE1211 | GONDI SAI PRAKASH | 7 |
| 25 | Y15EE1213 | JILLELLA ANVESH | 8 |
| 28 | Y15EE1217 | KORADA KRISHNA GOPI SATYANANDH | 4 |
| 29 | Y15EE1218 | KUKKAMUDI RAJESH | 6 |
| 31 | L16EE1236 | PALAPARTHI VINOD KUMAR | 7 |
| 37 | L16EE1241 | THODETI RAVI TEJA | 9 |
| 39 | L16EE1242 | UPPALAPATI VENKATESH | 7 |
| 40 | L16EE1243 | VELLABATI SUNIL KUMAR | 7 |
| 41 | L16EE1244 | YENUMULA BALA PHANEENDRA | 5 |

**LIST OF STUDENTS UNDER –** **MEDIUM LEARNERS (>60% TO <84%) IN M1**

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** |
| 5 | Y15EE1216 | KOMMINENI SRI DEEPTHI | 11 |
| 6 | Y15EE1219 | MUTHYALA TEJA SRI | 12 |
| 20 | L16EE1231 | CHEEMAKURTHI VEERA VENKATA NAGA YASWANTH | 15 |
| 26 | Y15EE1214 | KAILA MADHUBABU | 12 |
| 32 | L16EE1237 | PATHARLAPALLI SAI KUMAR | 13 |
| 34 | L16EE1238 | RAVURI PRAVEEN | 12 |
| 38 | Y15EE1226 | TUMMALA GOPALA REDDY | 15 |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**REMEDIAL CLASS ACTION**

**LIST OF STUDENTS UNDER – SLOW LEARNERS (<59%) IN A1**

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Signature of Student** |
| 3 | Y15EE1209 | CHENNUPATI KALYANI |  |
| 5 | Y15EE1216 | KOMMINENI SRI DEEPTHI |  |
| 8 | Y15EE1221 | NELLURI RENUKA |  |
| 9 | Y15EE1222 | PALLEPOGU DIVYA |  |
| 11 | Y15EE1225 | SHAIK SHAHIRA BEGUM |  |
| 12 | Y15EE1202 | ANKAM RAJESH |  |
| 14 | Y15EE1204 | BANKA JAGADEESH |  |
| 15 | Y15EE1205 | BELLAM GOPI |  |
| 16 | Y15EE1206 | BHAVIRISETTY NAGENDRA BABU |  |
| 20 | L16EE1231 | CHEEMAKURTHI VEERA VENKATA NAGA YASWANTH |  |
| 22 | L16EE1233 | CHERUKURI ANANDA BABU |  |
| 23 | Y15EE1210 | CHITTINENI GOPALA KRISHNA |  |
| 24 | Y15EE1211 | GONDI SAI PRAKASH |  |
| 25 | Y15EE1213 | JILLELLA ANVESH |  |
| 28 | Y15EE1217 | KORADA KRISHNA GOPI SATYANANDH |  |
| 29 | Y15EE1218 | KUKKAMUDI RAJESH |  |
| 30 | L16EE1235 | NALLABOTHU PREMNATH |  |
| 31 | L16EE1236 | PALAPARTHI VINOD KUMAR |  |
| 32 | L16EE1237 | PATHARLAPALLI SAI KUMAR |  |
| 33 | Y15EE1223 | PUTTA BHARGAV MEHER REDDY |  |
| 37 | L16EE1241 | THODETI RAVI TEJA |  |
| 38 | Y15EE1226 | TUMMALA GOPALA REDDY |  |
| 41 | L16EE1244 | YENUMULA BALA PHANEENDRA |  |

**Questions given for slow learners in A-I**

1. (a) Derive an Expression for the EMF developed by Alternator

(b) Define the terms of synchronous reactance and Voltage Regulation of alternator.

1. (a) State the advantages and disadvantages of using short pitched winding distributed winding in alternator.

(b) Explain synchronous impedance method of determining Regulation of alternator.

**REMEDIAL ACTION:** Weekly one question Discussion, learning and writing process. Spot evaluation.

**LIST OF STUDENTS UNDER –** **MEDIUM LEARNERS (>60% TO <84%) IN A1**

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Signature** |
| 6 | Y15EE1219 | MUTHYALA TEJA SRI |  |
| 7 | Y15EE1220 | NANDIGAM DIVYA |  |
| 13 | L16EE1228 | ANKAMSETTI NAGA RAJU |  |
| 17 | Y15EE1208 | BOMMISETTI GOPI |  |
| 18 | L16EE1229 | BONAM SRINIVASA REDDY |  |
| 39 | L16EE1242 | UPPALAPATI VENKATESH |  |
| 40 | L16EE1243 | VELLABATI SUNIL KUMAR |  |

**Questions given for Medium learners in A-I**

1. (a) Explain the procedure for POTIER method to calculate voltage regulation of alternator.

(b) Explain the procedure for MMF method to calculate voltage regulation of alternator.

**REMEDIAL ACTION:** Weekly one question Discussion, learning and writing process. Spot evaluation.

**Question given for slow learners in M-I on**

1. What are the causes of harmonics in the voltage waveform of an alternator? How can these be minimized.
2. State and Explain two reaction theory of salient pole machines

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Signature of Student** |
| 3 | Y15EE1209 | CHENNUPATI KALYANI |  |
| 7 | Y15EE1220 | NANDIGAM DIVYA |  |
| 8 | Y15EE1221 | NELLURI RENUKA |  |
| 9 | Y15EE1222 | PALLEPOGU DIVYA |  |
| 11 | Y15EE1225 | SHAIK SHAHIRA BEGUM |  |
| 12 | Y15EE1202 | ANKAM RAJESH |  |
| 13 | L16EE1228 | ANKAMSETTI NAGA RAJU |  |
| 14 | Y15EE1204 | BANKA JAGADEESH |  |
| 15 | Y15EE1205 | BELLAM GOPI |  |
| 16 | Y15EE1206 | BHAVIRISETTY NAGENDRA BABU |  |
| 17 | Y15EE1208 | BOMMISETTI GOPI |  |
| 18 | L16EE1229 | BONAM SRINIVASA REDDY |  |
| 23 | Y15EE1210 | CHITTINENI GOPALA KRISHNA |  |
| 24 | Y15EE1211 | GONDI SAI PRAKASH |  |
| 25 | Y15EE1213 | JILLELLA ANVESH |  |
| 28 | Y15EE1217 | KORADA KRISHNA GOPI SATYANANDH |  |
| 29 | Y15EE1218 | KUKKAMUDI RAJESH |  |
| 31 | L16EE1236 | PALAPARTHI VINOD KUMAR |  |
| 37 | L16EE1241 | THODETI RAVI TEJA |  |
| 39 | L16EE1242 | UPPALAPATI VENKATESH |  |
| 40 | L16EE1243 | VELLABATI SUNIL KUMAR |  |
| 41 | L16EE1244 | YENUMULA BALA PHANEENDRA |  |

**Remedial action:** Weekly one question Discussion, learning and writing process. Spot evaluation

**Question given for Medium learners in M-I on**

1. (a) List the difference between salient and non-salient pole types of rotor construction.

(b) What are the causes of harmonics in the voltage waveform of an alternator? How can these be minimized.

1. (a) Explain Armature Reaction of Alternator.

(b) A 500Kva, 1100V, 50Hz star connected 3-phase alternator has armature resistance per phase of 0.1 Ohm and synchronous reactance per phase of 1.5 Ohm. Find its voltage for (i) Unity Power Factor (ii) 0.9 Lagging and (iii) 0.8 Leading. Also, Calculate Voltage Regulation in each case.

1. (a) Explain the procedure for POTIER method to calculate voltage regulation of alternator.

(b) Explain the procedure for MMF method to calculate voltage regulation of alternator.

|  |  |  |  |
| --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Signature of the Student** |
| 5 | Y15EE1216 | KOMMINENI SRI DEEPTHI |  |
| 6 | Y15EE1219 | MUTHYALA TEJA SRI |  |
| 20 | L16EE1231 | CHEEMAKURTHI VEERA VENKATA NAGA YASWANTH |  |
| 26 | Y15EE1214 | KAILA MADHUBABU |  |
| 32 | L16EE1237 | PATHARLAPALLI SAI KUMAR |  |
| 34 | L16EE1238 | RAVURI PRAVEEN |  |
| 38 | Y15EE1226 | TUMMALA GOPALA REDDY |  |

**Remedial action:** Weekly one question Discussion, learning and writing process. Spot Evaluation.

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**RESULT ANALYSIS ASSESSMENT**

**LIST OF STUDENTS UNDER – SLOW LEARNERS (<40 TO 59%) IN A1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** | **Final Examination result** |
| 5 | Y15EE1216 | KOMMINENI SRI DEEPTHI | 6 | PASS |
| 12 | Y15EE1202 | ANKAM RAJESH | 6 | PASS |
| 14 | Y15EE1204 | BANKA JAGADEESH | 5 | PASS |
| 15 | Y15EE1205 | BELLAM GOPI | 5 | PASS |
| 16 | Y15EE1206 | BHAVIRISETTY NAGENDRA BABU | 5 | PASS |
| 20 | L16EE1231 | CHEEMAKURTHI VEERA VENKATA NAGA YASWANTH | 6 | PASS |
| 22 | L16EE1233 | CHERUKURI ANANDA BABU | 6 | PASS |
| 24 | Y15EE1211 | GONDI SAI PRAKASH | 5 | PASS |
| 25 | Y15EE1213 | JILLELLA ANVESH | 5 | PASS |
| 29 | Y15EE1218 | KUKKAMUDI RAJESH | 5 | PASS |
| 30 | L16EE1235 | NALLABOTHU PREMNATH | 7 | PASS |
| 31 | L16EE1236 | PALAPARTHI VINOD KUMAR | 5 | PASS |
| 32 | L16EE1237 | PATHARLAPALLI SAI KUMAR | 5 | PASS |
| 33 | Y15EE1223 | PUTTA BHARGAV MEHER REDDY | 5 | PASS |
| 37 | L16EE1241 | THODETI RAVI TEJA | 5 | PASS |
| 38 | Y15EE1226 | TUMMALA GOPALA REDDY | 7 | PASS |

**LIST OF STUDENTS UNDER –SLOW LEARNERS (<60%TO 85%) IN A-I**

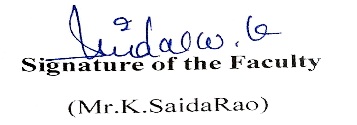
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** | **Final Examination result** |
| 6 | Y15EE1219 | MUTHYALA TEJA SRI | 8 | PASS |
| 7 | Y15EE1220 | NANDIGAM DIVYA | 8 | PASS |
| 13 | L16EE1228 | ANKAMSETTI NAGA RAJU | 9 | PASS |
| 17 | Y15EE1208 | BOMMISETTI GOPI | 9 | PASS |
| 18 | L16EE1229 | BONAM SRINIVASA REDDY | 8 | PASS |
| 39 | L16EE1242 | UPPALAPATI VENKATESH | 8 | PASS |
| 40 | L16EE1243 | VELLABATI SUNIL KUMAR | 9 | PASS |

**LIST OF STUDENTS UNDER – SLOW LEARNERS (<41 %TO 59%) IN M1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** | **Final Examination result** |
| 3 | Y15EE1209 | CHENNUPATI KALYANI | 9 | PASS |
| 7 | Y15EE1220 | NANDIGAM DIVYA | 10 | PASS |
| 12 | Y15EE1202 | ANKAM RAJESH | 10 | PASS |
| 13 | L16EE1228 | ANKAMSETTI NAGA RAJU | 7 | PASS |
| 15 | Y15EE1205 | BELLAM GOPI | 9 | PASS |
| 17 | Y15EE1208 | BOMMISETTI GOPI | 10 | PASS |
| 18 | L16EE1229 | BONAM SRINIVASA REDDY | 7 | PASS |
| 24 | Y15EE1211 | GONDI SAI PRAKASH | 7 | PASS |
| 25 | Y15EE1213 | JILLELLA ANVESH | 8 | PASS |
| 31 | L16EE1236 | PALAPARTHI VINOD KUMAR | 7 | PASS |
| 37 | L16EE1241 | THODETI RAVI TEJA | 9 | PASS |
| 39 | L16EE1242 | UPPALAPATI VENKATESH | 7 | PASS |
| 40 | L16EE1243 | VELLABATI SUNIL KUMAR | 7 | PASS |

**LIST OF STUDENTS UNDER –** **MEDIUM LEARNERS (>60% TO <84%) IN M1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **R No** | **Reg.No** | **Name of the Student** | **Obtained Marks** | **Final Examination result** |
| 5 | Y15EE1216 | KOMMINENI SRI DEEPTHI | 11 | PASS |
| 6 | Y15EE1219 | MUTHYALA TEJA SRI | 12 | PASS |
| 20 | L16EE1231 | CHEEMAKURTHI VEERA VENKATA NAGA YASWANTH | 15 | PASS |
| 26 | Y15EE1214 | KAILA MADHUBABU | 12 | PASS |
| 32 | L16EE1237 | PATHARLAPALLI SAI KUMAR | 13 | PASS |
| 34 | L16EE1238 | RAVURI PRAVEEN | 12 | PASS |
| 38 | Y15EE1226 | TUMMALA GOPALA REDDY | 15 | PASS |





**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**Result Analysis at the End of Course**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **YEAR** | **STAFF MEMBER** | **O** | **A+** | **A** | **B+** | **B** | **C** | **D** | **F** | **W** | **Appeared** | **Passed** | **Pass %** |
| 1 | 2019-20 | Mr.K.Saidarao | 2 | 6 | 4 | 11 | 10 | 2 | 4 | 1 | 0 | 40 | 39 | 98% |

**GRADES: >=90%--O, 80%to89%--A+, 70%to79%--A, 60%to69%--B+, 50%to59%--B, 45%to49%,--C, 40% to 44%,--D, <=39%--F and W for absent**

|  |  |
| --- | --- |
| **Mid-I Results** | |
| No of Students in Below Target Level | No of Students in Above Target Level |
| 19 | 18 |

|  |  |
| --- | --- |
| **Mid-II Results** | |
| No of Students in Below Target Level | No of Students in Above Target Level |
| 11 | 29 |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**Result Analysis**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **YEAR** | **STAFF MEMBER** | **O** | **A+** | **A** | **B+** | **B** | **C** | **D** | **F** | **W** | **Appeared** | **Passed** | **Pass %** |
| 1 | 2019-20 | Mr.K.Saidarao | 2 | 6 | 4 | 11 | 10 | 2 | 4 | 1 | 0 | 40 | 39 | 98% |

**GRADES: >=90%--O, 80%to89%--A+, 70%to79%--A, 60%to69%--B+, 50%to59%--B, 45%to49%,--C, 40% to 44%,--D, <=39%--F and W for absent**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **YEAR** | **STAFF MEMBER** | **S** | **A** | **B** | **C** | **D** | **E** | **F** | **W** | **Appeared** | **Passed** | **Pass %** |
| 1 | 2016-17 | Mr.K.Murali Krishna Raju | - | - | 3 | 5 | 1 | - | 1 | 0 | 10 | 9 | 90 |
| 2 | 2015-16 | Mr.P.Ramesh Babu | 1 | 1 | 2 | 5 | 6 | 0 | 3 | 0 | 18 | 15 | 83.33 |
| 3 | 2014-15 | Mr. J.Syam Kumar | 1 | 0 | 4 | 4 | 5 | 0 | 4 | 0 | 18 | 14 | 77.77 |
| 4 | 2013-14 | Mr.A Pavan Kumar | 1 | 3 | 2 | 3 | 7 | 6 | 7 | 1 | 29 | 22 | 75.8 |

**GRADES: >=85%--s, 75%to84%--A, 65%to74%--B, 55%to64%--C,**

**45%to54%--D, 40%to44%,--E, <=39%--F and W for absent**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **YEAR** | **STAFF MEMBER** | **70-60** | **59-50** | **49-40** | **39-28** | **Fail** | **Absent** | **Highest** | **Appeared** | **Passed** | **Pass %** |
| 4 | 2012-13 | Mr.G.veera Bhadra Chary | 1 | 4 | 20 | 19 | 6 | 0 | 60 | 50 | 44 | 88 |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**ADVANCED LEARNERS A-1 (>85%)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **R.No** | **Reg.No** | **Name of the Student** | **Activity** | **Date** |
| 2 | Y15EE1207 | BOGINENI PRIYANKA | SEMINAR ON CONSTRUCTIONAL DETAILS OF SYNCHRONOUS MACHINES | 25-Sep-2017 |
| 10 | Y15EE1224 | SHAIK GOUSE BI |
| 19 | L16EE1230 | BRUNDAVANAM SASANK VENKATAKRISHNA SAI |
| 21 | L16EE1232 | CHENNURU DHANUNJAYA |
| 26 | Y15EE1214 | KAILA MADHUBABU | SEMINAR ON DIFFERENT TYPES OF VOLTAGE REGULATION OF SYNCHRONOUS MACHINES | 16-Oct-2017 |
| 34 | L16EE1238 | RAVURI PRAVEEN |
| 36 | L16EE1240 | TADAKALURU SREEKANTH |

**ADVANCED LEARNERS M-1 (>85%)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **R.No** | **Reg.No** | **Name of the Student** | **Activity** | **Date** |
| 2 | Y15EE1207 | BOGINENI PRIYANKA | Prepare PPT on Different Types of Special Electrical Machines | 23-Oct-2017 |
| 10 | Y15EE1224 | SHAIK GOUSE BI |
| 19 | L16EE1230 | BRUNDAVANAM SASANK VENKATAKRISHNA SAI |
| 21 | L16EE1232 | CHENNURU DHANUNJAYA |
| 22 | L16EE1233 | CHERUKURI ANANDA BABU | Seminar on Applications of Special Electrical Machines | 30-Oct-2017 |
| 30 | L16EE1235 | NALLABOTHU PREMNATH |
| 33 | Y15EE1223 | PUTTA BHARGAV MEHER REDDY |
| 36 | L16EE1240 | TADAKALURU SREEKANTH |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**REMEDIAL ACTION TAKEN**

|  |  |  |  |
| --- | --- | --- | --- |
| **R.No** | **Reg No** | **Action Taken** | **Signature of student** |
| 9 | Y15EE1221 | Previous Question paper discussed, Brief explanation of Different types of Synchronous machines, and Solved Problems on Voltage Regulation , refer to text book some important Topics |  |

Signature of Faculty

(Mr.G.Satish)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – RENEWABLE ENERGY SOURCES (EE-416/1)**

|  |  |  |
| --- | --- | --- |
| Faculty Name: Mr.G.SATISH | Year / Sem: B.Tech in ECE 4/1 | Academic Year: 2019-20 |

**CO-PO/PSO ATTAINMENT**

|  |  |
| --- | --- |
| **C316**.**1** | Understand the Construction, Working principle of operation of three phase Synchronous Generator and analyse the methods of determining the Voltage Regulation. **(Synthesis)** |
| **C316**.**2** | Understand the specifications of synchronous generators and are able to solve problems involving synchronous machines operating alone or in parallel. **(Application)** |
| **C316**.**3** | Comprehend the Three phase synchronous Motor operation, Characteristics, Performance and Applications. **(Synthesis)** |
| **C316**.**4** | Gain knowledge in principle of working, specifications and applications of universal motor and single phase ac series motor, BLDC motor. (**Knowledge)** |
| **C316**.**5** | Gain knowledge in principle of operation, Construction and characteristics of Single Phase Synchronous Motors, Stepper Motors and Liner Induction Motor. **(Knowledge)** |

**Mapping on CO’s to PO**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **C316.1** | 3 | 2 | 1 | - | - | - | - | - | - |  | - | 1 |
| **C316.2** | 2 | 3 | 1 | - | - | - | - | - | - |  | - | 1 |
| **C316.3** | 2 | 1 | 3 |  | - | - | - | - | - |  | - | 1 |
| **C316.4** | 3 | 1 | 2 |  | 1 |  |  |  |  |  |  | 1 |
| **C316.5** | 3 | 1 | 2 |  | 1 |  |  |  |  |  |  | 1 |
| **C316** | 2.6 | 1.6 | 1.8 |  | 1 |  |  |  |  |  |  | 1 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CO** | ATTAINMENT | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **C316** | **2** | **1.7** | **1** | **1.2** |  | **0.8** |  |  |  |  |  |  | **0.8** |