

SYLLABUS
BACHELOR OF VOCATION
RENEWABLE ENERGY TECHNOLOGY
RETB3PUP
OUTLINE OF PAPERS AND TESTS
FOR
B. Voc. RENEWABLE ENERGY TECHNOLOGY PART –I (Semester-I)
Session: 2021-2022, 2022-23 & 2023-24

CODE	SUBJECTS	L	T	P	TOTAL CREDITS *one credit =15 hrs./1 lecture of 1 hr.(L+T+P)	External Marks	Internal Marks	Practical Marks	TOTAL MARKS
RETB1101T	Punjabi –I (Qualifying)*	3	1		4	75	25		100 (Satisfactory/ Unsatisfactory)*
RETB1102C	Introduction to computers	3	1	3	7	74	26	45	145
RETB1103C	Ecology and Environment Management/Green Chemistry	3		3	6	74	26	45	145
RETB1104C	Renewable Energy Sources and Technologies	3		3	6	74	26	45	145
RETB1105C	Solar Photovoltaic Technologies	3		3	6	74	26	45	145
	Industrial visit			1	1				20
	Total General Education Component				12				600
QP	Qualification pack of level 4				18			Evaluation Shall be done by Sector skill Council	

NOTE : *Marks are not included in total marks. (Qualifying paper)

SYLLABUS**BACHELOR OF VOCATION
RENEWABLE ENERGY TECHNOLOGY****RETB3PUP****OUTLINE OF PAPERS AND TESTS FOR****B. Voc. RENEWABLE ENERGY TECHNOLOGY PART –I (Semester-II)****Session: 2021-2022, 2022-23 & 2023-24**

CODE	SUBJECTS	L	T	P	TOTAL CREDITS* *one credit =15 hrs./1 lecture of 1 hr.(L+T+P)	External Marks	Internal Marks	Practical Marks	TOTAL MARKS
RETB-1201T	Punjabi-II (Qualifying) *	3	1		4	75	25		100 (Satisfactory/ Unsatisfactory)*
RETB-1202C	Holistic Development I: Personality Development	3	1	3	7	74	26	45	145
RETB-1203C	Entrepreneurship Development/Renewable Energy Policies	3		3	6	74	26	45	145
RETB-1204C	Biofuels /Basics of waste to Energy Conversion Technologies	3		3	6	74	26	45	145
RETB-1205C	Solar Energy Technology	3		3	6	74	26	45	145
	Industrial Visit			1	1				20
RETB-1206T	Drug Abuse: problem, Management and Prevention*(Qualifying)	2			2	70	30		100 (Satisfactory/ Unsatisfactory)*
	Total General Education Component				12				600
QP	qualification pack of level 5				18				Evaluation will be done by FICSI Result will be communicated to the university by college

NOTE : *Marks are not included in total marks. (**Qualifying paper**)

RETB1101T - PUNJABI-I (QUALIFYING)

SYLLABUS & COURSES OF READING FOR PUNJABI QUALIFYING /ELEMENTARY PUNJABI/PROFESSIONAL PUNJABI WILL BE AS PER UG (BOARD OF STUDIES) IN PUNJABI FOR DEGREE LEVEL PROFESSIONAL COURSES, PUNJABI UNIVERSITY, PATIALA

RETB1102C**INTRODUCTION TO COMPUTERS****Time Allowed 3hrs; MM: 74; Pass Percentage: 35 %****INSTRUCTIONS FOR THE PAPER-SETTER**

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will be able to explain operating system MS window.
- Students will gain the information about MS word, MS excel and MS power point.
- Students will prepare Document using MS-Word.
- Learner will be able to Present data using MS-power point.
- Learner will be able to creating tables in MS ACCESS.
- Learn will be able to import and export data from MS ACCESS..
- Learner will be able to creating forms using software.

SECTION-A

1. **Operating system MS Window** -Definition & functions, Basic components of windows, types of icons, taskbar, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel -adding and removing software and hardware, setting date and time, screen saver and appearance.

Introduction to concept of Internet: Internet applications, www, Email, FTP, web browsers (Internet Explorer, Google Chrome, Mozilla)

2. **MS-Word** –Documentation, Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advanced features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.
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SECTION-B

3. **MS-Excel** - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation. Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, and Scenario.
4. **MS-PowerPoint:** Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds and insertion, Inserting Animated Pictures.

REFERENCES

1. Russell A. Stultz, Learn Microsoft Office – BPB Publication
2. Microsoft Office – Complete Reference – BPB Publication
3. P.K. Sinha and P. Sinha, 2002, Foundations of Computing, First Edition, BPB.
4. Torben Lage Frandsen, Microsoft office word.
5. Word 2010 Introduction by Stephen
6. Chetan Srivastva, Fundamentals of Information Technology, Kalyani Publishers.
7. Turban Mclean and Wetbrete, 2011, Information Technology and Management, Second Edition, John Wiley & Sons.
8. Satish Jain,1999, Information Technology, BPB.
9. V. Rajaraman, Fundamental of Computers – (Prentice Hall)
10. P. K. Sinha, Fundamental of Computers – (B.P.B publication)
11. ALEXIS LEON, Introduction to Information Systems.
12. Dr. S. Chand, Courter, G Marquis (1999). Microsoft Office 2000, Computer Fundamentals & Its Business Applications, Professional Edition. BPB.

Practical

M.M. 45

1. MS-Windows: features.
 2. Documentation Using MS-Word.
 3. Electronic Spread Sheet using MS-Excel.
 4. Database Management using Excel.
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5. Presentation using MS-PowerPoint.
 6. Creating tables in MS ACCESS using different ways.
 7. Import and export data from MS ACCESS..
 8. Creating forms in MS ACCESS.
 9. Working of Internet with Different Browsers (Internet Explorer, Google Chrome, Mozilla).
 10. Applications of Internet. (Handling Email accounts)
 11. Student Have to Do Following Activities:
 - a. How to create Email?
 - b. How to send email?
 - c. How to Download the Data?
 - d. How to attach files with email?
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RETB1103C

ECOLOGY AND ENVIRONMENT MANAGEMENT

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will gain knowledge about environment, scope of ecology, and ecosystem & its components, functions and types.
- Students will gain the information about different mechanisms involved in energy transfer in ecosystem.
- Students will come to know about pollution & its types and detection of environmental pollutants.
- Students will be able to learn about environmental biotechnology including treatments of different wastes and bioremediation.

SECTION-A

Our Environment: Geological consideration of Atmosphere, Hydrosphere, Lithosphere Scope of Ecology. Development & Evolution of Ecosystem. Principles & Concepts of Ecosystem. Structure of ecosystem. Strata of an ecosystem. Types of ecosystem including habitats. Cybernetics & Homeostasis. Biological control of chemical environment.

Energy transfer in an Ecosystem. Food chain, food web, Energy budget, Production & decomposition in a system. Ecological efficiencies, Trophic structure & energy pyramids, Ecological energetic, principles pertaining to limiting factors, Bio-geochemical cycles (N,C,P cycles).

SECTION-B

Pollution & environmental Health related to Soil, Water, Air, Food, Pesticides, Metals, Solvents, Radiations, Carcinogen, and Poisons. Detection of Environmental pollutant. Indicators & detection systems. Bio-transformation, Plastic, Aromatics, Hazardous wastes, Environmental cleanup:

Case studies.

Environmental biotechnology: basics of Treatment of solid, liquid and gaseous waste, biotechnology in protection and preservation of environment. Toxicity assessment, Bioremediation.

SUGGESTED READINGS

1. Chapman, J.L., Reiss, M.J. 1999. Ecology: Principles and applications (2nd edition) Cambridge University Press.
2. Divan Rosencraz, Environmental laws and policies in India, Oxford Publication.
3. Ghosh, S.K., Singh, R. 2003. Social forestry and forest management. Global Vision Publishing House
4. Joseph, B., Environmental studies, Tata Mc Graw Hill.
5. Michael Allabay, Basics of environmental science, Routledge Press.
6. Miller, G.T. 2002. Sustaining the earth, an integrated approach. (5th edition) Books/Cole, Thompson Learning, Inc.
7. Mohapatra Textbook of environmental biotechnology, IK publication.
8. Rana, SVS, Environmental pollution - health and toxicology, Narosa Publication
9. Sinha, S. 2010. Handbook on Wildlife Law Enforcement in India. TRAFFIC, India.
10. Thakur, IS, Environmental Biotechnology, IK Publication.
11. Odum, E. P. and Barrett, G.W. Fundamentals of ecology Brooks/Cole.
12. Smith, T. M. and Smith, R. L. 2015. Elements of ecology. Pearson. 9th Edition.

PRACTICALS MM. 45

1. Study of all the biotic and abiotic components of any simple ecosystem- natural pond or terrestrial ecosystem or human modified ecosystem.
2. Determination of population density in a terrestrial community or hypothetical community by quad rate method and calculation of the Simpson's and Shannon- Weiner diversity index for the same community.
3. Principle of GPS (Global Positioning System).
4. Study of the types of soil, their texture by sieve method and rapid tests for -pH, chlorides, nitrates, carbonates and organic carbon
5. Study any five endangered/ threatened species.

RETB1103C

GREEN CHEMISTRY

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %ax.

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will gain knowledge about the basics of green chemistry & its importance.
- Students will gain the information about different alternatives to traditional chemicals.
- Students will come to know about fermentation.
- Students will gain information about green-house gases.

SECTION-A

Green Chemistry: What is Green Chemistry, Definition, Why is this new area of Chemistry getting too much attention? Why should chemist pursue the Goals of Green Chemistry? Tools of Green Chemistry.

Alternative feed stocks starting material, Alternative Reagents, Alternative Solvents, Alternative products /Target molecules, Process of Analytical Chemistry, Alternative Catalysts, Principles of Green Chemistry, Green Chemistry Using Bio Catalytic Reactions.

SECTION-B

Introduction Fermentation and Bio-transformations, Production of Bulk and fine chemicals by microbial fermentation 1. Bulk & fine Chemicals 2. Antibiotics, 3. Vitamins 4. Bio catalysis synthesis of industrial chemicals by bacterial constructs 5. Future Trends.

Avoidance of toxic functional Group, Minimizing Bio availability, Minimizing Auxiliary substances, Green house Technology, Types of Green-house gases.

REFERENCES

1. V. Kumar, "An Introduction to Green Chemistry" Vishal publishing Co. Reprint Edition 2012.
Rashmi Sanghi, M.M Srivastava "Green Chemistry" Fourth Reprint - 2009
2. Anastas & Warner, Green Chemistry: Theory & Practice ,Oxford Univ. Press, New York,1998

PRCATICALS MM. 45

1. To demonstrate the lab scale fermenter.
2. To demonstrate production of antibiotics
3. Microbial production of vitamins.
4. To perform antibiotic assay.
5. To prepare a scrap file on Green Chemistry.
6. Project report on green chemistry

RETB1104C

RENEWABLE ENERGY SOURCES AND TECHNOLOGIES

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will learn about various non-conventional energy sources.
- Students will be able to learn about various renewable and non-renewable resources of energy.
- Students will gain knowledge about the alternative source of energy, electricity generation from non-conventional resources and fuels & its types.
- Students will be able to explain the principles of solar cooking and solar distillation systems.
- Students will understand use of wind for production of energy.

SECTION-A

Introduction to Non-conventional energy sources, Solar energy, Wind energy/power, Energy from biomass and biogas, Ocean energy, Wave energy, Tidal energy/power, Geothermal energy, Hydrogen energy, Thermo-electric power, Fuel cell, Magneto-Hydro-dynamic (MHD) generator.

Renewable and Non-renewable energy sources: Renewable (Non-conventional) energy sources, Non-renewable energy sources, Alternative energy sources, Energy Scenario in Indian context, Electricity Generation from Non-conventional energy sources, Impact on environment, Fuels, Classification of fuels, Solid fuels, Liquid fuels, Gaseous fuels

SECTION-B

Solar Thermal Energy Systems: Absorption and Radiation, Heat Gain and Loss, Solar Cooking Systems, Principle of Cooking, Cooking by Boiling, Speed of Cooking, Energy Required for Cooking, Types of Solar Cookers, Solar Distillation System, Distillation: Natural Process for Purifying Water

Wind Energy-Wind Flow, Motion of Wind, Vertical Wind Speed Variation, Distribution of Wind Speeds, Power in the Wind, Conversion of Wind Power: Wind Turbine, Efficiency of Wind Power Conversion: C_p , Types of Wind Turbines, Components of a Wind Turbine.

REFERENCES

1. Renewable Energy Technologies: A Practical Guide for Beginners, Chetan Singh Solanki, PHI|School Books (2008)
2. Fundamentals of Renewable Energy Systems Paperback – D. Mukherjee, New Age International Publisher; First edition (2011)
3. Renewable Energy Sources and Emerging Technologies, Kothari D.P. and Singal K. C, New Arrivals - PHI; 2 edition (2011)
4. G. D. Rai, Non- conventional Sources of Energy, Khanna Publishers, Delhi.

PRACTICALS MM. 45

1. To learn about different sources of energy
2. To understand impact of non conventional sources of energy on environment.
3. To get familiarize about the alternative sources of energy
4. To know about the origin and development of risk assessment
5. To demonstrate different types of solar cooker.
6. To study about energy scenario in India.
7. To learn about different types of wind turbines.

RETB1105C

SOLAR PHOTOVOLTAIC TECHNOLOGIES

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will learn about the different types of solar radiations, solar spectrum and variation in amount of radiations.
- Students will be able to understand about fundamentals of solar cells.
- Students will be able to learn about various aspects of solar PV technology.
- Students will gain the knowledge about the solar PV Systems and their applications.

SECTION-A

Solar Radiation: Solar Spectrum, Extra-terrestrial Radiation, Radiation on the Earth Surface, Global, Direct and Diffuse Solar Radiation, Solar Radiation at a Given Location, Annual Variation in Solar Radiation, Optimal Tilt for Solar Equipment, Monthly Averaged Global Radiation at Optimal Tilt

Fundamentals of Solar Cells : Characteristics of semiconductors, Differences between semiconductors, insulators and conductors Theory of p n junction, Principle of operation of p-n junction Solar Cell, I-V Characteristics Solar Cell parameters ,Voc, Isc, FF ,conversion efficiency and power output of solar cell, Status of Photovoltaic Technologies.

SECTION-B

Solar PV Technology: Advantages and Limitations, Brief History of the Technology, Basics of Technology, Amount of Power Generated, the Rated Power and Actual Power from a Module, Generating More Power Using Solar PV, Protection of Solar Cells.

Solar PV Systems and their applications : Solar PV Module Ratings and Cost, Battery Ratings and Cost, Inverter Ratings and Cost, Maximum Power Point Tracking (MPPT), Solar PV Lantern, Design

and Costing, Stand-alone PV System: Home Lighting and Other Usage, Solar PV System Designing , Case Study, Cost Estimation of a PV System.

REFERENCES

1. Renewable Energy Technologies: A Practical Guide for Beginners, Chetan Singh Solanki, PHI School Books (2008)
2. Solar Photovoltaics: Fundamentals, Technologies and Applications, Chetan Singh Solanki PHI; 3 edition 2015
3. Renewable Energy Sources and Emerging Technologies, Kothari D.P. and Singal K. C, New Arrivals - PHI; 2 edition (2011)
4. Solar Photovoltaic Technology and Systems: A Manual for Technicians, Trainers and Engineers, Chetan Singh Solanki PHI (1 January 2013)
5. Fundamentals of Renewable Energy Systems Paperback – D. Mukherjee, New Age International Publisher; First edition (2011)
6. Science & Technology of Photovoltaics P Jayrama Reddy, BS Publications ,CRC Press 2010
7. From Sunlight to Electricity: A Practical Handbook on Solar Photovoltaic Applications, Suneel Deambi, The Energy and Resources Institute, TERI (30 January 2009).

PRACTICALS MM.45

1. Identifying and Measuring the Parameters of Solar PV Module in the Field.
 2. Series and Parallel Connection of PV Modules.
 3. Estimating the Effect of sun tracking on Energy Generation by Solar PV Module.s
 4. Efficiency Measurement of Standalone Solar PV System.
 5. Dark and Illumination Current-Voltage Characteristics of Solar Cell.
 6. Solar Cells Connected in series and parallel.
 7. Dependence of Solar Cell I-V Characteristics on Light Intensity and Temperature.
 8. Carrier Lifetime Measurements for a Solar Cell.
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RETB1201T - PUNJABI (QUALIFYING)

SYLLABUS & COURSES OF READING FOR PUNJABI QUALIFYING /ELEMENTARY PUNJABI/PROFESSIONAL PUNJABI WILL BE AS PER UG (BOARD OF STUDIES) IN PUNJABI FOR DEGREE LEVEL PROFESSIONAL COURSES, PUNJABI UNIVERSITY, PATIALA

RETB1202C

HOLISTIC DEVELOPMENT-PERSONALITY DEVELOPMENT

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Student will be able to explain about the Personality Patterns, Personal Effectiveness and Personality Determinants.
- Learner will gain knowledge to resolve stress and conflict.
- Students will have insight about time management.
- Learner will perform different personality tests and will be able to judge their own personality.
- Learners will administer Adjustment Inventory and will have knowledge of parameters of adjustment.

SECTION-A

Personality: Meaning & Concept, Personality Patterns, Symbols of Self, Moulding the Personality Pattern, . Personality & Personal Effectiveness. Personality Determinants: An overview of Personality determinants. Evaluation of Personality: Sick Personalities and Healthy Personalities.

Introduction to Interpersonal Relations, Analysis of Relations of different ego-states, Analysis of Strokes, Analysis of Life position, Introduction to Motivation, Relevance and types of Motivation, Motivating others

SECTION-B

Stress Management: Introduction to Stress, Causes of Stress, Impact of Stress, Managing Stress,
Conflict Management: Introduction to Conflict, Causes of Conflict, Managing Conflict

Time Management: Time as a Resource, Identify Important Time Management Wasters, Individual Time Management Styles, Techniques for better Time Management.

REFERNCES:

1. Lall & Sharma – Personal Growth Training & Development (Excel Books)
2. Janakiraman- Training & Development (Biztantra)
3. Hurlock., Elizabeth B - Personality Development (Tata McGraw Hill, 1st Ed.)
4. Sahu R..K. - Training for Development (Excel Books, 1st Ed.)
5. Prof. Achhru Singh & Dr. Dharminder Singh Ubha, Personality Development and Soft Skills.
6. Petri, H.L. and Govern, J.M., 2013, Motivation: Theory, Research, and Applications, (sixth edition) Wadsworth Cengage Learning: Belmont CA.
7. Stephen Robbins, Organisational Behaviour .
8. Keith & Davis, Organisational Behaviour.
9. Fred and Luthans, Organisational Behaviour.
10. K.A. Ashwathapa, Organisational Behaviour .

Practical MM.45

1. Group activities + individual activities to resolve stress and conflict.
 2. Collaborative learning for time management.
 3. Interactive sessions based on time management.
 4. Ensure Participation for personality development.
 5. Empirical Learning for personality traits.
 6. To perform different personality tests.
 7. Personality Inventory administration.
 8. Adjustment Inventory administration.
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RETB1203C

ENTREPRENEURSHIP DEVELOPMENT

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will gain knowledge about basics of entrepreneurship and entrepreneurs and their characteristics.
- Students will learn about various entrepreneurial support systems.
- Students will have clear knowledge about the roles of different organizations and corporations in entrepreneurship development. .
- Student will have understanding of different Entrepreneurship development programs in India.
- Student will be able to understand process involved and requirements for planning and establishment of small scale unit.

SECTION-A

Entrepreneurship: definition, requirements to be an entrepreneur, entrepreneur and intrapreneur, entrepreneur and manager, growth of entrepreneurship in India, women entrepreneurship, rural and urban entrepreneurship. competencies of entrepreneurs-(1) Decision Making (2) Problem Solving (3) Risk Taking (4) Leadership(5) Communication(5) Dealing with customers

Entrepreneurial Support System: National Bank for Agriculture and Rural Development (NABARD), National Small Industries Corporation (NSIC), Small Industries Development Bank of India (SIDBI)

Role of District Industries Centre, Directorate /Commissioner of Industries Office, State Financial Corporation , Technical Consultancy Organization Entrepreneurship Development Institute of India (EDII), BIRAC, NEDC.

SECTION-B

Green job Sector in India: An overview, Make In India: MSME: (Schemes and Entrepreneurship development programs) The National Institute for Entrepreneurship and Small Business Development (NIESBUD)- Science and Technology Entrepreneurship Parks (STEPS) -Use of IT enabled services in entrepreneurship - E Licensing, E filing.

Planning a small scale unit: Whom to approach for what, Project Identification, requirements to start a business, SSI registration, obtaining NOC from state pollution control board, Factory department, DIC.

REFERENCES:

1. P. C. Jain, Handbook for New Entrepreneur Oxford Latest Edition
2. S. S. Khanka, Entrepreneurial Development S. Chand Latest Edition
3. Thomas W.Zimmerer & NormanM. Scarborough, Essentials of Entrepreneurship and small business management 4th Edition
4. Vidya Hattangadi, 2007, Entrepreneurship Himalaya.
5. Vasant Desai 2008, Small Scale Industries and Entrepreneurship Himalaya.
6. Angadi, V.B., Cheema H.S., & Das, M.R. 2009, Entrepreneurship, Growth, and Economic Integration-A linkage Himalaya.
6. Roy Rajeev, Entrepreneurship Oxford Latest Edition
7. Gordon E & Natarajan, K. 2008, Entrepreneurship Development Himalaya.
8. Coulter Entrepreneurship in action PHI 2nd Edition

PRACTICAL M.M. 45

1. Test to assess the Entrepreneurial spirit of learner through questionnaire (Entrepreneurial Self-Assessment Tool).
 2. Demonstrate and practice five core life skills:
 - (a) Managing self and others
-

(b) Positive Attitude

(c) Creativity

(d) Team building

(e) Motivation

3. A SWOT analysis of entrepreneurial opportunity in your locality with reference to the vocational course.

4. Show videos of successful entrepreneurs.

RETB1203C

RENEWABLE ENERGY POLICIES

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will gain knowledge about global and environmental issues.
- Students will learn about Energy policy issues.
- Students will have knowledge about economics of energy
- Student will be able to understand role of energy in economic development.

SECTION-A

Energy and Environment Basic Issues: Criteria for Economic Growth; Issues for Developing Countries. Role of energy in economic development and social transformation: Energy & GDP, GNP and its dynamics.

Global and Local Environmental Issues: Climate Change Negotiations Technological Options: Energy-Efficiency and New Energy Technologies; Renewable Energy: Issues, Prospects and Policies.

SECTION-B

Energy Policy Issues: Fossil Fuels, Renewable Energy, Power sector reforms, restructuring of energy supply sector, energy strategy for future.

Energy Policy, Global Energy Issues, National & State Level Energy Issues, National & State Energy Policy, Industrial Energy Policy, Energy Security, Energy Vision. Energy Pricing & Impact of Global Variations. Energy Productivity (National & Sector wise productivity).

REFERENCES:

1. Energy for a sustainable world: Jose Goldenberg, Thomas Johansson, A.K.N.Reddy, Robert Williams (Wiley Eastern).
2. Energy policy for : B.V.Desai (Weiley Eastern),
3. Modeling approach to long term demand and energy implication: J.K.Parikh.
4. Energy Policy and Planning: B.Bukhootsow.
5. TEDDY Year Book Published by Tata Energy Research Institute (TERI),
6. World Energy Resources: Charles E. Brown, Springer2002.
7. 'International Energy Outlook' -EIA annual Publication
8. Heat and Thermodynamics – M.W. Zemansky (McGraw Hill Publication)
9. Principles of Energy Conversion: A.W. Culp (McGraw Hill International edition.) 10.BEE Reference book: no.1/2/3/4.
10. Energy Economic by Parag Diwan 2. Energy Sources & Policies in India by Rishi Muni Dwivedi

PRACTICALS MM. 45

1. To study Criteria for Economic Growth
2. To get familiarize with issues related to energy for Developing Countries.
3. To learn role of energy in economic development and social transformation:
4. To learn about Energy & GDP
5. To know about Energy Policy Issues
6. To know Power sector reforms
7. To understand energy strategy for future.

RETB1204C
BIOFUELS

Time Allowed: 3hrs;

MM: 74;

Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will learn about the fundamental concepts in learning biofuel /bioenergy and renewable feedstock's productions.
- Learner will produce ethanol by solid substrate fermentation.
- Learner will analyze contents of ethanol produced by micro-organisms by spectrophotometer.
- Learner will perform Biodiesel production from oil seeds.
- Learner will estimate ethanol concentration in a given sample by acidified dichromate method.
- Students will be able to understand about Biomass preprocessing and production of biofuels from biomass.
- Students will gain knowledge about processes involved in conversion of biomass to biofuel such as bioethanol, biodiesel.
- Students will gain knowledge about environmental impacts of biofuel production.

SECTION-A

Fundamental concepts in understanding biofuel/bioenergy production, Renewable feedstocks and their production (Special lecture), Feedstocks availability, characterization and attributes for biofuel/bioenergy production

Biomass preprocessing: drying, size reduction, and densification. Various biofuels from biomass.
Biomass conversion to heat and power: thermal gasification of biomass, anaerobic digestion

SECTION-B

Biomass conversion to biofuel: thermochemical conversion, syngas fermentation. Biochemical conversion to ethanol, biomass pretreatment. Different enzymes, enzyme hydrolysis, and their applications in ethanol production

Biodiesel production from oil seeds, waste oils and algae, Environmental impacts of biofuel production, Energy balance and life-cycle analysis of biofuel production (special lecture) . Value-added processing of biofuel residues and co-products

REFERENCES

1. Biofuels by Wim Soetaert, Erick J. Vandamme, Wiley
2. Biofuels Engineering Process Technology by Caye M. Drapcho, Terry H. Walker, M.G.Hills

PRACTICALS MM.45

1. Field visit to biofuel conversion plant
 2. Production of ethanol solid substrate fermentation
 3. Analysis of contents of ethanol produced by microorganism by spectrophotometer.
 4. Biodiesel production from oil seeds.
 5. Estimation of ethanol concentration in a given sample by acidified dichromate method.
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RETB1204C

BASICS OF WASTE TO ENERGY CONVERSION TECHNOLOGIES

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will be able to explain waste and waste processing especially municipal Solid waste, industrial waste and biomedical waste.
- Students will be able to explain composting.
- Students will have the knowledge about sources of energy generation.
- Students will demonstrate composting of waste.
- Students will performing vermicomposting of waste.
- Students will survey sources of waste production.
- Learners will demonstration biogas production.

SECTION-A

Introduction to waste and waste processing, Definitions, sources, types and composition of various types of wastes; Characterization of Municipal Solid Waste (MSW) , Industrial waste and Biomedical Waste (BMW)

Aerobic composting, Incineration, different type of incineration; medical and pharmaceutical waste incinerations, Landfilling. Rules related to the handling, treatment and disposal of MSW and BMW in India.

SECTION-B

Sources of energy generation, incineration, gasification of waste using gasifiers, briquetting,

Utilization and advantages of briquetting. Anaerobic digestion of sewage and municipal wastes,

Direct combustion of MSW-refuse derived solid fuel, industrial waste, agro residues, and land fill

Environmental and Commercial Aspects of Waste to Energy Present status of technologies for conversion of waste into energy, design of waste to energy plants for cities, small townships and

villages, Environmental and health impacts of incineration and other waste to energy conversion systems,

REFERENCES

1. Gary C. Young, Municipal Solid Waste to Energy Conversion Processes: Economic, Technical, and Renewable Comparisons, ISBN: 9780470539675, John Wiley and Sons 2010.
2. Velma I. Grover and Vaneeta Grover, Recovering Energy from Waste Various Aspects, ISBN 978-1-57808-200-1. 2002.
3. Shah, Kanti L., Basics of Solid and Hazardous Waste Management Technology, Prentice Hall.2000.
4. Rich, Gerald Hazardous Waste Management Technology, Podvan Publishers. 1987
5. Marc J. Rogoff, Waste-to-Energy, Elsevier. 2011.
6. Parker, Colin and Roberts, Energy from Waste - An Evaluation of Conversion Technologies, Elsevier Applied Science, London. 1985
7. Manoj Datta, Waste Disposal in Engineered Landfills, Narosa Publishing House. 2001
8. Bhide A. D., Sundaresan B. B., Solid Waste Management in Developing Countries, INSDOC, New Delhi. 1983

PRACTICALS MM. 45

1. Demonstration of Composting of waste
2. Vermicomposting of waste
3. To survey sources of waste production.
4. Demonstration and visit to biogas production

RETB1205C

SOLAR ENERGY TECHNOLOGY

Time Allowed: 3hrs; MM: 74; Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

LEARNING OUTCOMES

- Students will Study on green-house effect on solar flat plate collector
- Students will estimate instantaneous efficiency of a solar liquid flat plate collector
- Learner will Study solar flat plate collector in series and parallel combination
- Estimation of efficiency of solar air heaters
- Learner will performance evaluation of concentrating solar collector
- Learner will perform evaluation of solar cooker
- Student will estimate efficiency of solar photovoltaic panels
- Learner will study effect of Shadow & tilt angle on solar photo voltaic panel
- Learner will study solar photo voltaic panel in series and parallel combination
- Study on charging characteristics of a lead acid battery using solar photo voltaic panel

SECTION-A

Solar Radiation: Solar angles, day length, angle of incidence on tilted surface; Sunpath diagrams; Shadow determination; Extraterrestrial characteristics; Effect of earth atmosphere; Measurement & estimation on horizontal and tilted surfaces; Analysis of Indian solar radiation data and applications.

Flat-plate Collectors: - Effective energy losses; Thermal analysis; Heat capacity effect; Testing methods; Evacuated tubular collectors; Air flat-plate Collectors: types; Thermal analysis; Thermal drying. Selective Surfaces - Ideal coating characteristics; Types and applications; Anti-reflective coating; Preparation and characterization.

SECTION-B

Solar Heating & Cooling System: - Liquid based solar heating system; Natural, forced and gravity flow, mathematical modeling, Vapour absorption refrigeration cycle; Water, ammonia & lithium

bromide-water absorption refrigeration systems; Solar operated refrigeration systems; Solar desiccant cooling. -Solar Thermal Energy Storage - Sensible storage; Latent heat storage; Thermo-chemical storage.

Solar cooker: Solar pond; Solar passive heating and cooling systems: Greenhouse technology: Fundamentals, design, modeling and applications.

SPV Applications - Centralized and decentralized SPV systems; Stand alone, hybrid and, grid connected system, System installation, operation and maintenances; Field experience; PV market analysis and economics of SPV systems – Government Schemes and Policies

REFERENCES

1. Garg H P., Prakash J., Solar Energy: Fundamentals & Applications, Tata McGraw Hill, New Delhi, 1997
2. S P Sukhatme, Solar Energy, Tata McGraw Hill, 2008 T3. J F Kreider and Frank Kreith, Solar Energy Handbook, McGraw Hill, 2000
3. D Y Goswami, Frank Kreith and J F Kreider, Principles of Solar Engineering, Taylor & Francis, 1998
4. Tiwari G.N., Suneja S., Solar Thermal Engineering System, Narosa Publishing House, New Delhi, 1997.
5. Alan L Fahrenbruch and Richard H Bube , Fundamentals of Solar Cells: PV Solar Energy Conversion, Academic Press, New York , 1983

PRACTICALS MM. 45

1. Study on green-house effect on solar flat plate collector
 2. Estimation of instantaneous efficiency of a solar liquid flat plate collector
 3. Study on solar flat plate collector in series and parallel combination
 4. Estimation of efficiency of solar air heaters
 6. Performance evaluation of concentrating solar collector
 7. Performance evaluation of solar cooker
 8. Estimation of efficiency of solar photovoltaic panels
 9. Effect of Shadow & tilt angle on solar photo voltaic panel
 10. Study on solar photo voltaic panel in series and parallel combination
 11. Study on charging characteristics of a lead acid battery using solar photo voltaic panel.
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RETB1206T

DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION*
(QUALIFYING)

**SYLLABUS & COURSES OF READING FOR DRUG ABUSE: PROBLEM, MANAGEMENT
AND PREVENTION WILL BE AS PER QUALIFYING PAPER FOR UNDER GRADUATE
COURSES, PUNJABI UNIVERSITY, PATIALA**
