SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P.)

SYLLABUS

For

B.Sc. in Fire Safety and Hazards Management

Course Code: BSFSHM

Department of Fire Safety & Disaster Management
Faculty of Science

Duration of Course	:	3 Year
Examination Mode	:	Yearly
Examination System	:	Non Grading

Swami Vivekanand University, Sironja Sagar (M.P.)

2016-2019

(Moral Values & Language) (BSFSHM -FC101/ 2)

Part - A

Unit – 1	**नैतिक मूल्य** 1. नैतिक मूल्य परिचय एवं वर्गीकरण– डॉ. शशि राय 2. आचरण की सभ्यता – सरदार पूर्ण सिंह	15
Unit – 2	**हिन्दी भाषा** 1. स्वतंत्रता पुकारती (कविता) – जयशंकर प्रसाद 2. जाग तुझको दूर जाना (कविता) – महादेवी वर्मा 3. उत्साह (निबंध) – रामचन्द्र शुक्ल 4. शिरीष के फूल (ललित निबंध) – हजारी प्रसाद द्विवेदी 5. वाक्य संरचना और अशुद्धियाँ (संकलित)	17
Unit- 3	**हिन्दी भाषा** 1. नमक का दारोगा (कहानी) – प्रेमचन्द्र 2. हार की जीत (कहानी) – सुदर्शन 3. भगवान बुद्ध (निबंध) – स्वामी विवेकानंद 4. लोकतंत्र एक धर्म है (निबंध) – सर्वपल्ली राधाकृष्णन 5. पर्यायवाची– विलोम शब्द, एकार्थी–अनेकार्थी शब्द, शब्दयुग्म (संकलित)	18
	Part - B	
Unit- 4	**English Language** 1. John Keats : Ode to a Nightingale 2. Rabindra Nath Tagore : Where the Mind is Without Fear 3. Rajgopalachari : Preface to the Mahabharata 4. J.L. Nehru : Tryst with Destiny	17
Unit- 5	**English Language** Comprehension/ Unseen Passage Composition and Paragraph writing (Based on the expansion of an idea) **Basic language skills** : vocabulary, synonyms, antonyms, word formation, prefixes, suffixes, confusing words, misused words, similar words with different meanings. proverbs **Basic language skills :** Grammer and Usage, Tenses, Prepositions, determiners, countable/ uncountable nouns, verbs, articles and adverbs.	18

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 85 (15+35+35) अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु पृथक से 15 (5+5+5) अंक निर्धारित है।

Development of Entrepreneurship (BSFSHM -FC103)

Particulars

इकाई – 1	उद्यमिता–परिभाषा, विशेषताऐं एवं महत्व, एक उद्यमी के प्रकार एवं कार्य, उद्यमिता अभिप्रेरणा घटक।	
इकाई – 2	अ) लक्ष्य प्राप्ति की प्रेरणा एवं विचारों की स्थापना। लक्ष्य निर्धारण एवं चुनौती का सामना। समस्या समाधान एवं सृजनात्मकता। क्रमबद्ध योजना एवं क्षमता की दिशाबद्धता। आत्मविश्वास का विकास। ब) सम्प्रेषण कला। शब्दिक व अशाब्दिक संप्रेषण प्रभावित करने की क्षमता। सम्प्रेषण की आधुनिक तकनीक	
इकाई – 3	अ) परियोजना प्रतिवेदन चुनी हुई प्रक्रिया का मूल्यांकन विस्तृत परियोजना प्रतिवेदन– आवश्यकता एवं प्रासंगिकता परियोजना प्रपत्र के प्रमुख भाग, परियोजना प्रतिवेदन तैयार करना। ब) संगठन के प्रकार का चयन–एकाकी व्यवसाय, साझेदारी एवं सहकारी समिति का अर्थ एवं विशेषताएं संगठन के चयन को प्रभावित करने वाले घटक। स) आर्थिक प्रबंधन वित्तीय संस्थान एवं बैंको की भूमिका, बैंकिग, वित्तिय योजना, कार्यशील पूँजी–मूल्यांकन तथा प्रबंधन, लागत व मूल्य निर्धारण तथा लाभ कामूल्यांकन, आर्थिक लेखा–जोखा रखना।	

इकाई – 4	अ) उत्पादन का प्रबंधन, कच्चा माल क्रय करने की प्रक्रिया चल सम्पत्ति / माल का प्रबंधन गुणवत्ता प्रबंधन कर्मचारी प्रबंधन पैकिंग ब) विपणन प्रबंधन बिक्री एवं बेचने की कला बाजार की समझ एवं विपणन नीति उपभोक्ता प्रबंधन समय प्रबंधन	
इकाई – 5	1. नियामक संस्थाओं की भूमिका–जिला उद्योग केन्द्र, प्रदूषण निवारण मंडल, खाद्य एवं औषधि प्रशासन, विद्युत विभाग तथा नगर निगम का विशेषअध्ययन। 2. विकासात्मक संस्थाओं की भूमिका, खादी एवं ग्रामीण आयोग / बोर्ड, मध्यप्रदेश वित्त निगम, अनुसूचित बैंक, मध्य प्रदेश का महिला आर्थिक विकास निगम। 3. स्वरोजगार मूलक योजनाएँ – प्रधानमंत्री रोजगार योजना, स्वर्ण जयंती शहरी रोजगार योजना, रानी दुर्गावती स्वरोजगार योजना, दीनदयाल स्वरोजगार योजना। 4. विभिन्न अनुदान योजनाएँ– लागत पूँजी अनुदान, ब्याज अनुदान, प्रवेश कर से छूट, परियोजना प्रतिवेदन, प्रतिपूर्ति अनुदान आदि। 5. महिला उद्यमियों हेतु विशेष प्रेरणाएँ, संभावनाएँ एवं समस्याएँ। 6. मध्य प्रदेश आदिवासी वित्त विकास निगम की योजनाएँ , म.प्र. अन्त्यावसायी निगम की योजना, म.प्र. पिछड़ा वर्ग एवं अल्पसंख्यक वित्त विकास निगम की योजनाएँ।	

* सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 35 अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु 15 अंक निर्धारित है।

Development of Entrepreneurship

(BSFSHM -FC103)

Unit I : Entrepreneurship - Definition, Characteristics and importance, Types and functions of an entrepreneur, motivational factors of entrepreneurship.

Unit II :

(a) Motivation to achieve targets and establishment of ideas. Setting targets and facing challenges. Resolving problems and creativity. Sequenced planning and guiding capacity, Development of self confidence.

(b) Communication skills, Verbal & Non Verbal Communication, Capacity to Influence Modern Techniques of Communication.

Unit III :

(c) Project Report - Evaluation of selected process. Detailed project report Preparation of main part of project report pointing out necessary and viability.

(d) Selecting the form of Organisation –Meaning and characteristics of sole Proprietorship, Partnership and cooperative committees, elements affecting selection of a form of an organisation

(e) Economic management –Role of banks and financial institutions banking Financial plans, working capital- evaluation and management, keeping of accounts

Unit IV:

(a) Production management. Methods of purchase of Raw Materials. Management of movable assets/goods. Quality management. Employee management. Packing.

(b) Marketing Management. Sales and the art of selling. Understanding the market and market policy. Consumer management. Time management.

Unit V:

a. Role of Regulatory institutions – District Industry Centre, Pollution Control Board, Food and Drug Administration, special study of Electricity Development and Municipal Corporation.
b. Role of development organizations, Khadi & village Commission/Board, MP Finance Corporation, scheduled banks, MP Women's Economics Development Corporation.
c. Self -employment -oriented schemes, Prime Minister's Employment schemes, Golden Jubilee Urban environment scheme, Rani Durgavati Self - Employment scheme, Pt. Deendayal Self -employment scheme.
d. Various grant schemes - Cost of Capital grant, interest grant, exemption from entry tax, project report, reimbursement grant, etc.
e. Special incentives for Women Entrepreneurs, prospects & possibilities.
f. Schemes of M.P. Tribal Finance Development Corporation, schemes of M.P. Antyavasai Corporation, schemes of M.P. Backward Class and Minorities Finance Development Corporation.

Fundamental of Fire

(BSFSHM -104)

Unit 1: Anatomy Of Fire; –Fire, Triangle Of Fire, Tetrahedron Of Fire, Classification Of Fires, , Method To Extinguish The Fire, Fire Load.

Unit 2: , **Water Fire Tender And Foam Tender-**Specifications of Different Types Of Water Tender, Foam Tender, DCP Tender And Crash Fire Tender . Emergency (Rescue) Tender, Turntable Ladders, Hydraulic Platform.

Unit 3: Detection Systems Availability & Usefulness; Abstract, Automatic Fire Detector Overview And Comparison, Spot Type Heat Sensing Fire Detectors, Rate-Of Rise Heat Detectors, Fixed Temperature Heat Detectors, Rate-Compensated Heat Detectors, Combination Heat Detectors, Line-Type Heat Sensing Devices, Smoke-Sensing Fire Detectors, Ionization Spot-Type Smoke Detectors, Photoelectric Spot-Type Light Scattering Detectors, Photoelectric Light Obscuration Smoke Detectors.

Unit 4: Personal Protective Equipment (Ppe's) - Personal Protective Equipment, Types of Protective Equipment, Non Respiratory Equipment, Respiratory Equipments

Unit 5: Building Construction; Main Structural Elements and Parts of Building, Classification of Buildings Based On Occupancy as per NBC.

REFERENCES:

1) Carl Goodson, "Essentials of fire fighting" Fire protection publications; 5th edition
2) Pann Well, "Fire engineering's skill drills for Fire Fighter", Pann Well; 1st & 2nd edition.
3) Relevant ISI special appliances and equipments

Fire Fighting Equipment
(BSFSHM -105)

Unit 1- Fire Extinguisher - Classification Of Fire Fighting Systems, Fire Extinguisher, Water Type Extinguishers , Soda Acid Extinguisher, Water Co_2 Extinguisher, Foam Extinguishers,Co_2 Extinguisher, Dry Chemical Powder (DCP) Type Extinguisher, Halon Type Fire Extinguisher, Standard Tests Of Fire Extinguishers.

Unit 2: Hose & Hose Fittings- Hose, Types, Test Of Hose, Characteristics Of Hose, Care And Maintenance Of Hose, Coupling, Collecting Breeching, Hose Bandage,

Unit 3: Valves- Valves, Function, Gate Valves, Rising Stem Gate Valve, Limitation Of Gate Valve, Ball Valve, Butterfly Valve, Foot Valve, Air Release Valve, Non Return Valve, Landing Valves, Valve Selection Considerations.

Unit 4: Ladder - Types of Ladders, Use of Ladders, material of ladders and its advantages and disadvantages of ladders material, maintenance of various ladders.

Unit 5: B A Set- Breathing Apparatus, Definition Of Types, Working Procedure Of BA Set & Standard Instruction, Distress Signal Units.

REFERENCES:

1. Carl Goodson, “Essentials of fire fighting” Fire protection publications; 5th edition
2. Pann Well, “Fire engineering’s skill drills for Fire Fighter”, Pann Well; 1st & 2nd edition.
3. H.M.S.O. London manuals

Applied Chemistry

(BSFSHM -106)

Unit:-1 Anatomy Of Fire; Triangle Of Fire, Tetrahedron Of Fire, Life Cycle Of Fire, Chain Reaction, Chain Reaction Steps, Combustion, Role Of Fuel In Combustion, Role Of Temperature In Combustion, Role Of Oxygen In Combustion, Chain Reaction, Flash Point, Fire Point, Short Note: Flash Point, Experiment Based On Flash Point And Fire Point Determination, Combustion In Natural Fires, Different Forms Of Natural Fire, Spontaneous Auto Ignition Temperature , Ignition Point , Auto Ignition,

Unit:- 2 Heat In Chemical Reaction; Bomb Calorimeter, Describe The Experiment To Determine The Specific Heat Of Given Substance (Copper),_Latent Heat, Calorific Value, Delong's Formula, Types Of Gaseous Flames, Premixed Vs Diffusion Flames, Stationary Vs Propagating Flames, Laminar Versus Turbulent Flames, Deflagration Vs Detonation, Radiation From Flames, Heat Transfer And Burning Rates In Fire

Unit: 3 Basics Of Explosions; Common Ignition Sources, Ignition Hazards, Ignition Sources, Combustibility Hazards, Material Properties, Ambient Conditions, Resulting Spread Of Flame, Fire Properties Of Common Material- Ammonia, Ammonium Nitrate, Benzene, Carbon Dioxide, Carbon Monoxide, Chlorine, Chloroform, Hydrochloric Acid, Hydrogen, Oxygen, Sulphuric Acid, Solvent Naphtha.

Unit:-4 Basic Chemical Kinetics; Chemical Kinetics (Or Kinetics Of Chemical Reaction), Rate Of Chemical Reaction (Velocity), Rate Of Chemical Reaction (Velocity), Order Of Reactions, Zero Order Reaction, First Order Reaction, Second Order Reaction, Third Order Reaction, N^{th} Order Reaction

Unit:-5 Basic Chemical Kinetics; Arrhenius Equation, Low Of Mass Action, Homogeneous Reactions, Batch Reactor, Single External Jacket, Factors Influencing Rate Of Reaction, Thermal Explosion Theory, Catalytic Oxidation, Anti Oxidant, Fire Retardants,

Applied Physics

(BSFSHM -107)

Unit:-1-_Introduction; Physics, Systems Of Units, Fundamental & Supplementary Units Of Si, Practical Norms For The Use Of Si Systems, Dimension & Dimensional Formula, Dimensional Analysis, Use Of Dimensional Analysis, Limitations Of Dimensional Analysis, Some Important Practical Units, Vector, Laws Of Vector Addition, Laws Of Vector Multiplication, Properties Of Fluids.

Unit:2-Hydrostatics; Fluid, Hydrostatic Paradox, Pascal's Law, Buoyancy, Archimedes's Principal, Intermolecular Forces, Molecular Range, Surface Of Influence, Surface Film, Surface Tension, Surface Energy, Angle Of Contact, Capillarity, Stream Line, Tube Of Flow, Laminar Flow, Turbulent Flow.

Unit:3-Thermodynamics-Thermodynamics,Thermodynamically System, Thermodynamically Variables, Thermodynamically Equilibrium, Work Done By A Thermodynamically System, Joule's Law, Zeroth Law Of Thermodynamics, First Law Of Thermodynamics, Sign Convention, Second Law Of Thermodynamics.

Unit:-4 Thermodynamics- Reversible Process, Irreversible Process, Thermodynamic Processes, Cyclic Process, Heat Engine, Types Of Heat Engine, Expansion & Compression Of Gases.

Unit:-5 X-Rays And Radioactivity; Discovery Of X-Rays, Production Of X-Rays, Properties Of X-Rays, Uses Of X-Rays, Radioactivity- Characteristic Properties Of Radioactive Radiations, Properties Of Radiations, Important Terms.

Industrial Safety Management

(BSFSHM -108)

Unit 1: Safety Management-Concept Of Safety, Industrial Accidents, Reasons For Accident Prevention, Function Of Safety Management, Safety Organizations, Objectives Of Safety Organizations, Role Of Industrial Organization (Safety), Essential Requirments Of Safety Programme, Plant Safety Rules And Procedures, Formulation Of Rules, Types Of Rules, Violation Of Rules, Reduction Of Hazards.

Unit 2: Material Handling- Kinetics Of Manual Handling, Hazards Due To Lifting Loads, Techniques And Working Methods, Correct Method Of Lifting, Straight Back Lifting, Bent Back Lifting, Physical Work Capacity And Ages Of Male And Female, Load Lifting Techniques, Carrying Object Of Different Size And Shapes, Minimize Ergonomic Hazards With Material Handling, Safe Use Of Accessories For Manual Handling.

Unit 3: Electrical Safety- Definitions- Current, Voltage, Ohm's Law, Earthing, Fuse..Etc, Safety Measures For Electrical Wok, Electrical Work In Hazardous Area, Classification Of Hazardous Areas, Electrical Shock Treatment, Flameproof Electrical Equipment, Overload And Short Circuit Protection,

Unit 4: Electrical Safety- Hazards And Control Of Static Electricity Control Of Static Electricity, Essential Safety Points To Be Checked At Various Electrical System, Switch Room – Sub –Station Building, Panel Board, Substation/ Switch Yard, Generators, Battery.

Unit 5: Safety In Miscellaneous Industries- Hazards And Safety Measures For Welding Process, Types Of Welding Processes, Precaution And Safety, Fertilizer Industry, Pesticides Industry, Lethal Dosages, Manipulation Process And Their Hazards And Controls, Textile Industry, Steel Industry, Chemical Hazards.

REFERENCES:

Fundamentals of Industrial safety & health by K.U. Mistry.

Factories Act 1948

Search & Rescue Techniques and Paramedics

(BSFSHM -109)

Unit: 1 Introduction-Introduction To Search Technique, Correct Method Of Searching A Room, Factors Influencing Search & Rescue, Types Of Searches, Factors While Searching, Rescue Technique, Shelter In Place, Exit Assist, Rescue By Fireman, Fireman's Lift, Rescue Using Fire Services Equipments, Ladders And Hydraulic Platforms, Requisite Qualities Of Rescuer, Different Rescue Scenarios.

Unit-2: Confined Space & Their Hazards- Defining Confined Space, Hazard Recognition, Permit Required Confined Spaces, Causes, Flammable /Toxic Atmosphere, Flammable Range, Effects Of Reduced Oxygen, Physical Hazards, Entry Requirement, Type Of Permits, Equipments Needed At Confined Space Entry, Air Monitoring Equipments, Case Studies, Ventilation And Inerting, Rescue Equipments & Accessories. Entry rescue, Non entry rescue

Unit-3: On site Emergency Planning

On-site Emergency Plan**,** Emergency Alarm System**,** Emergency Control Room**,** Key personnel**,** Emergency Control Program, Off-site Emergency Plan**,**Mutual Aid Scheme**,** Emergency Evacuation**,** Security and Media management.

Unit-4: Various Rescues Scenarios- Rescue In Mines And Shafts, Road Accident (Highway) Rescue, Entry Into Vehicle, The Type Of Injury Depends, Rescue From High Rise Buildings, Rescue Using Chair Knot, Collapse Of Building/ Judgement Of Collapse, Precautions While Rescue, Rescue Problems In Case Of High Rise Building, Rescue In Case Of Poisonous Gas Leak, Rescue In Sewer Line, Rescue In Case Of Electrical Appliances.

Unit-5: Paramedics- Human Anatomy, Vital Organs, First Aid, Aims, Responsibility Of First Aider, Principles Of First Aid, Main Three Emergencies, Wounds, Bleeding, Dressings & Bandages, Types Of Bandages, Types Of Injuries, Electric Shock, Electric Burn, Effect On Heart, Toxic Gases, Cardiac Massage, Burns, Helping A Person Whose Clothes Have Caught Fire, Management Of Burns.

References:

1. Carl Goodson, "Essentials of fire fighting" Fire protection publications; 5th edition.
2. Pann Well, "Fire engineering's skill drills for Fire Fighter", Pann Well; 1st & 2nd edition.
3. Guy R. Colonna, "Fire protection guide to hazardous material", NFPA; 14TH edition.
4. Joe varela, "Hazardous Material handbook for Emergency Responders", Onguard.
5. Penn Well, "Technical rescue operation", volume- II; Larry Collins.
6. The manual of fire ship – 6 – A by HMSO
7. Elementary principles of rescue by Got. Of India, ministry of Home Affairs
8. Rescue Service Manual by HMSO
9. Rescue –Civil defense handbook by HMSO
10. Rescue tender for Airfields by ISI
11. Relevant ISI special appliances and equipments
12. Manual of fireman ship book no. 244

Swami Vivekanand University, Sagar (M.P.)

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(आधार पाठ्यक्रम)

Papercode- (201)

Class - बी.ए / बी.एस.सी. / बी.कॉम. / बी.एच.एस.सी. / बी.सी.ए. / द्वितीय वर्ष

Subject - आधार पाठ्यक्रम

Peper - हिन्दी भाषा और वैज्ञानिक चेतना

पाठ्यक्रम–

इकाई–1

(क) हिन्दी की व्याकरणिक कोटियाँ

1.रचनागत उदाहरण 2.प्रयोगगत विवेचन (संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण आदि)

सामास, संधि, संक्षिप्तियाँ– 3.रचनागत 4.प्रयोगगत विवेचन विविध विषयों पर संक्षिप्त निबंध लेखन हिन्दी में प्रयुक्त पारिभाषिक एवं तकनीकी शब्दावली

1.पारिभाषिक एवं वैज्ञानिक शब्दावली की आव यकता एव परिषाशा

2. उदाहरण, 3.प्रयोग मुहावरे व लोकोक्तयाँ 4.दोनो में अन्तर, 5. मुहावरे, उनके अर्थ और प्रयोग

6. लोकोक्तियाँ, उनके अर्थ और प्रयोग

(ख) (1) मुक्त गगन है : माखनलाल चतुर्वेदी, शिकागो व्याख्यानः स्वामी विवेकानन्द वर्ण विन्यास : विश्वनाथ प्रसाद मिश्र, (2) व्याकरण / सम्प्रेशण कोशल

(क) भाषा और व्याकरण (ख) समास–रचना और प्रकार

(ग) सन्धि (घ) संक्षिप्तियाँ

इकाई–दो

(1) क्या लिखूँ ?: पदुमलाल पुन्नालाल बख्शी भय से मुक्तिः जे. कृश्णमूर्ति

शिरीश के फूलः डॉ.हजारीप्रसाद द्विवेदी,माण्डवःरामनारायण उपाध्याय,पर्यावरणः संकलित, राष्ट्रीय सेवा योजना एक शैक्षणिक पाठ्यक्रम :डॉ.रामाश्रय ''रत्नेश'',

(2) व्याकरण / सम्प्रेषण कौशल निबन्ध लेखन

इकाई–तीन

(1) औधेगिक क्रान्तिः डॉ. शयामाचरण दुबे, छोटा जादूगरः जयशंकर प्रसाद

(2) व्याकरण / सम्प्रेशण कोशल

(क) पारिभाषिक एवं तकनीकी भाब्द (ख) मुहावरे (ग) लोकोकितयाँ

इकाई–चार

विज्ञान और साहित्यः जैनेन्द्र कुमार, विज्ञान परिभाषा, भाखाएँ संक्षिप्त इहितास संकलित, प्रमुख वैज्ञानिक आविश्कार और हमारा जीवनःसंकलित, हमारा ब्रह्माण्ड और जीवनः हमारा सौर मण्डलः संकलित, जीवनः उद्भव और विकासः संकलित, भारत की वनस्पतियाँ और जीवः संकलित।

इकाई–पाँच

भोजनः संकलित, स्वास्थ्यः संकलित।

A./B.Com/B.Sc./B.H.Sc.

II Year

Subject : Foundation Course – English

Paper – II English Language and Scientific Temper

Papercode (202)

Unit-1

1. Walt Whitman – O Captain! My Caption! , 2. George Orwell – What is Science
3. J. Bronowski - The Dilemma of The Scientist,4. Will Durant – The Origin of Science
5. Somerset Maugham – The Luncheon,6. O Henry The Last Leaf,7. Major Ancient Indian Scientist Adopted,8. C.P Snow- Ramanujan,9. Aldous Huxley – J.C.Bose,10. Human Rights,11. R.K Narayan – The Axe,12. Dr. C.V Raman – Water,13. Robert Frost – stopping by Woods on a Snow evening,14. Dr. Yashodhara Mishra – Understanding Gender issues.

Unit-II

Comprehension of an unseen passage question should be objective/Multiple- choice and should test (a) an understanding of the passage in question, and (b) a group of general language skills and issues with Reference Word and usage Within the passage.

Unit-III

Paragraph Writing:- Based on expansion word limit 100-150 words. Candidates to attempt any one of three alternative topics provided.

Unit-IV

Basic language Skill-Vocabulary Synonyms Antonyms one word Substitution of Phrases, Prefixes, Suffixes and word Derivation making Sentence With Idioms and Phrases Corrections of Sentence With Words Likely to be Confused Question Should not repeat the Examples Or exercises given in the text book.

Unit-V

Basic language Skill- Grammar and Usage modals linking devices, tenses, and preposition verb forms Structures Gerunds Participles and infinitive, verbs followed by a preposition and phrasal verbs, articles and determines Countable and uncountable nouns adjectives, and adverbs. Questions Should not repeat the example exercise given in the text book.

Editor Dr. M.C.Saxena

Prof. Zaki-Ur-Rahman-Khan, Dr. Yashodhara Mishra

General Editor Dr. Dhananjay Verma

BA. /B.Sc./ B.Com.
II Year
Subject - Environmental studies
Foundation Course - Paper lll
Papercode- (203)

Unit –l

- Environment and Ecological Study
- Problem of natural Resources

Unit –ll

- Environmental pollution
- Bio- diversity and its Protection

Unit – lll

- Environment and Social issues
- Role of men in the Conservation of natural Resources.
- Human Population and Environment

Unit – lV

- Food Resources - World Food Problem.
- Energy Resource - Increasing Demand for Energy
- multidisciplinary nature of environment studies

Unit –V

- land Resource - land Degradation and induced . landslides in the lend Group Resources
- Environment Conservation laws.
- Environment Wealth

References :-

Dr. S.C. Jain , Environmental Studies, kailash publication
Gupta & Agrawal Sahitya Bhawan Agra(u.p.)

BSFSHM-204 Fire Protection System

Unit 1: **Introduction to various fire protection system**- Introduction, Why fire protection systems are needed, Passive fire protection systems, Fire doors, Fire proofing materials, Dampers, Position of extinguishers, fire blankets, fire buckets and hose reel hose.

Unit 2: **Hydrant System**-Introduction & legal implications and standards used in India and abroad, Use of hydrant system, Ring mains, Layout of system from pump house to hydrant post, Outdoor hydrant system designing and indoor riser, Dry and wet risers, Main pump, booster pump, jockey pump. Piping: above ground/ underground.

Unit 3: Sprinklers, Spray, Deluge valve, HVWS and MVWS-Introduction and development, legal Implications and standards used, Hydrant Vs sprinkler system, Use and working of sprinklers, Types of sprinklers heads: pendent, upright and wall type. Types of sprinklers system by operation & layout, Nozzle description, Activation temperature, Operation and alarm valve description, What is spray system and its use, DV introduction and its uses, Drenchers,MVWS and HVWS – Intro and use.

Unit 4:Gaseous and DCP System -Introduction to types of gaseous systems-CO2,FM-200,Inergen,Halon,Application and properties and operation of gaseous systems, Application and properties and operation of DCP systems.

Unit 5: IS Specifications- Emergency Rescue Tender, Water Tenders, Foam Tender, CFT, Various Fire Extinguishers.

References:

1- Fire protection manual- tariff Advisory Committee
2- Design of water based fire protection system- Robert M. Gagnon
3- Fire protection engineering in building design- Jane l. Lataille.
4- Fire Detection and Alarm system- M. M. Bhuskute

BSFSHM- 205 Fire Prevention & Protection Measures

Unit 1: Basic Philosophy of Fire Safety Management & Fire Prevention-Fire prevention: Basic Philosophy, Principals of fire prevention, safety sampling, safety survey, incident recall technique (IRT), job safety analysis, The concept of fire safety inspection, audit, and checklist, Total loss control, damage control system, Hazard analysis, system safety analysis techniques (THERP), RISK Tolerability, Work permit system definition, classification & procedure.

Unit 2: Fire Safety Laws & legislations-Fire Service Act 1947, Petroleum Act – 1934,Gas cylinder rules – 1981. OISD 115/116, Pandals and temporary structure Act, Life safety code.

Unit 3: Hazards of fire propagation-Hazard of fire propagation, Concept of separation and compartmentalization. Possibilities of fire propagation through various features of buildings and Preventive measures through ducts and openings, Need & concept methods of segregation, Concept of Fire rating of walls (As per BS), roofs and intermediate floors, Concept and importance of fire proofing using mortar, RCC, fireproofing coating, fire paints.

Unit 4: Fire insurance-Introduction ,Expenses caused, Losses and expenses not covered/perils properties not covered, Additional premiums for perils and expenses, Documents required by insurer, Fire loss management in industry, Fire loss control program, Sequence of risk control

Unit-5: Fire case studies- Detailed analysis of fire case studies, especially those fires where large number of people have been involved. Interaction and relative value of the components of escape route design, especially smoke movement and control.

References :

1. General Fire Hazards and Fire Protection by J.J. Williams.
2. Fire Prevention Notes for Industrial Premises by F.P.A.
3.Fire Prevention Hand Book by Kesteren Fire Brigade

BSFSHM- 206 Hydraulics & Pumps

Unit-1 Basics of Hydraulics-Fire Hydraulics & its application, Fluid Properties, Flow & types of flow, Pressure & its measurement, velocity measurement, Discharge measurement.

Unit-2 Flow through Pipe-Pipe, Head losses in pipes, Series & Parallel Pipes, Water hammer Effect, Friction loss, C- factor, Valves, Types of Valves. Calculation of Water velocity in Pipes, Hazen Williams pressure loss formula, K – factor formula, Bernoulli's Theorem, Hydrostatics and hydraulic calculation.

Unit-3 Pumps-Pumps, Types of Pumps, Reciprocating Pump, Centrifugal Pump, Difference between Reciprocating & Centrifugal Pump, Pump Priming, Cavitations.

Unit-4 Hydraulic Machines-Hydraulic Machines, Hydraulic Crane, Hydraulic Lift, Hydraulic Ram, Torque Converter, Air lift Pump, Jet Pump.

Unit-5 Hydraulics: Measures of flow, pressure and pressure drop. KINEMATICS OF FLUIDS FLOW : Type of flow, path lines and stream lines, equation of continuity, one dimensional method of flow analysis.

References:

1. Fluid mechanics and hydraulics machines- R K Bansal
2. Pump Selection and application : Tyler C. Riches.
3. Pump Operators, Handbook : I.S. University of Science and Technology.
4. Fire Pumps and Hydraulics : I.E. Ditts and T.M. Harris.
5. Hydraulic Mechanics: Dr. J.Lal

BSFSHM- 207 Automobile System

Unit-1 Basics of Automobiles:
Automobiles, Prime Movers, I.C. Engine & its Classification, Petrol engine, Diesel engine, Different between Two Stroke & Four Stroke Engine, Comparison of Petrol & Diesel Engines.

Unit-2 Different parts of Automobiles:
Brakes, Clutch, Tyres, Wheel, Chassis, Axle & Differential, Fuel Supply Systems, Fuel Injection Systems, Supercharging.

Unit-3 Different Operating Systems of Automobiles:
Fuel Injection System for Diesel Engines, Suspension System, Steering System, Automobile Lubrication System, Automobile Cooling System.

Unit-4 Features of Automobiles:
Power Take off, Ground Clearance, Angle of Approach & Departure, Grade ability, New Automobile Safety Features.

Unit-5 Various Automobile safety devices

References:

1. Automobile chassis and body construction, Operation and Maintenance by Wills H. Crouse.
2. Automobile Machines – Principles and Operations by W.H. Crouse.
3. Automobile Engine overhaul by A.W. Judge and Sir Issac Pitman.
4. Automobile Electrical Maintenances by A.W. Judge and Sir Issac Pitman.
5. Heavy Vehicle Automobile Engg. & Safety

BSFSHM- 208 Safety in Various Industries

Unit 1: Construction Industry-introduction of construction industry and its work, Equipments and tools, Man power and material utilization, Fatal accidents case studies,1. Construction Equipments- a. Ladders and scaffolding b.Working platforms c. working on roofs. 2. Working underground- a. Excavation b.Drilling, blasting and trenching

Unit 2: Hydrocarbon Industries-General awareness of industry and MAH units:
Introduction: Significance of Hydrocarbon/ Petrochemicals, Hazard Awareness, Risk Assessment & Loss Prevention, Appraisal on Material Safety Data Sheets (MSDS),Industrial Hygiene and Occupational Health with reference to Chemical units, Appraisal on MAH categorization with reference to Manufacture, Storage and Import of Hazardous Chemicals Rules (MSIHCR).

Unit 3: Fire risk management in chemical industry- Introduction to Fires/ Explosion hazards in Chemical process units, Area Classification, Active and Passive Fire Protection Features, Fire prevention/ suppression features, Specific statutes on Fire Safety for Chemical Industries, Permit-to-work system (Hot work/ Confined space entry/ Excavation etc)
Unit 4: Safety in Engineering Industries- Introduction to hot & cold processes, Steel manufacture, Hazards and safety measures, Hot working of Metals, Health Hazards and Safety Measures
Hot Rolling Mill operations, forging operations, Preventive Maintenance of forging machines.

Unit 5: Need of safety in Engineering Industries:
Cold working of metals, Hand & foot operated process, Power process, Hydraulic & pneumatic process, Press brakes, Metal shears & slitters, forming rolls, bending & forming machine, Metal cutting machine, Cold rolling mills, Wire drawing operations, Safety in use of Machine Tools, Turning Machine, Boring or Drilling, Milling Machine, Grinding Machines, Planning & Shaping Machines, Broaching Machines, Slotting Machine.

References :

1. Fundamental of Industrial safety and Health – K U Mistry.
2. Accident Prevention manual for Industrial Operations, NSC, Chicago 1982.
3. Principles of Industrial managements by Kootaz & Donnel.
4. Brawn D. B. , system analysis & design for safety, Prentice Hall inc, New Jersey.
5. Lees, F.P., loss prevention in process industries, Butter worth's, New Delhi 1986

BSFSHM- 209- Laws related to Safety, Health & Environment

Unit 1

Factories Act 1948, M.P. Factories rules 1962. Madhya Pradesh Control of Industrial Major Accident Hazard Rules 1999.

Unit 2

Indian Explosive Act 1884, , Calcium Carbide Rules 1987. Static & Mobile Pressure Vessel Rules. Fire prevention Legislation. Fire Insurance Assessment.

Unit 3

Environment (Protection) Act 1986, MSIHC Rules. Water (Prevention and Control of Pollution) Act. Air (Prevention and control of pollution) Act. Chemical Accidents (Emergency, Planning, preparedness and response) Rules 1996.

Unit 4

Other Important Legislations. Boilers Act 1923, Public Liability Act 1991, Dock workers (Safety, Health & Welfare) Act. Safety & Health provisions of Building & other construction workers (R.E.C.S.) Act 1986 and central rules 1998 and Mines Act.

Unit 5

Gas Cylinder Rules 2004, Petroleum Act 1934 with Rules 2002, Electricity Act 2003 with rules.

References:-

1. All Relevant Acts & Rules.
2. Fire Services Acts & rules of different states.
3. Gen. Fire Insurance.
4. Safety and cases by Frank P Lecs.
5. Safety in chemicals & Petrochemical Industries.

Swami Vivekanand University, Sagar (M.P.)

CLASS – B.Sc. III YEAR

Paper code- (301)

SUBJECT – HINDI (FC)

हिन्दी भाषा एवं समसमायिकी

bdkbZ 1 अ – भारत माता सुमित्रानंदन पंत, परशुराम की प्रतीक्षा रामधारी सिंह दिनकर, बहुत बड़ा सवाल मोहन राकेश संस्कृति और राष्ट्रीय एकीकरण योगेश अटल।

ब– कथन की ौलियां रचनागत उदाहरण और प्रयोग।

vad&10

bdkbZ 2 अ– विकासशील देशों की समस्याएँ, विकासात्मक पुनर्विचार और प्रौद्योगिकी एवं नगरीकरण

ब– विभिन्न संरचनाएँ।

vad&10

bdkbZ 3 अ– आधुनिक तकनीकी सभ्यता, पर्यावरण प्रदूषण तथा धारणीय विकास।

ब–कार्यालयीन पत्र और आलेख। vad&10

bdkbZ 4 अ– जनसंख्या – भारत के संदर्भ में और गरीबी तथा बेरोजगारी

ब– अनुवाद vad&10

bdkbZ 5 अ– ऊर्जा और भाक्तिमान का अर्थशास्त्र

ब– घटनाओं, समारोहों आदि का प्रतिवेदन और विभिन्न प्रकार के निमंत्रण – पत्र vad&10

नोट –हिन्दी भाषा समसमायिकी– हिन्दी ग्रंथ अकादमी भोपाल

Swami Vivekanand University, Sagar (M.P.)

B.A./B.Com/ B.Sc IIIrd year

Foundation Course

Paper code- (302)

SUBJECT – ENGLISH

Unit-1 **Marks:10**

Essay type answers in about 200 words. Four essay types question to be asked an

two be attempted.

Unit-2 **Marks:10**

Writing skills for composition- Essay writing.

Unit-3 **Marks:10**

Précis riting.

Unit-4 **Marks:10**

(a) reading comprehension of unseen passages.

(b) Vocabulary based on text.

Unit-5 **Marks:10**

Grammar: Advanced Exercises.

Note- Question on unit I and IV (b) shall be asked from the prescribed text. Which will comprise of popular creative writings and the following items. Minimum needs: Housing and transport, Geo-economic profile of M.P. of education and culture, Women empowerment , Management of change (Physical quality of life) . War and human survival. The question of human social value, new Economic philosophy recent liberalization methods democratic decentralization (with reference to 73, 74 constitutional amendment.) The English language shall be sponsored by the M.P.Hindi Granth Academy.

Swami Vivekanand University, Sagar (M.P.)

B.A./B.Com/ B.Sc IIIrd year

Foundation Course

Paper code- (303)

SUBJECT – Computer Application

UNIT – I **Marks: 10**

Brief history of development of computer. Computer system concepts, computer system characterstics, capabilities and limitations, Types of computer, Basic component of a computer system. Control unit, ALU, Input/ Output functions and characteristics, Memory RAM, ROM and other types of Memory.

UNIT- II **Marks: 10**

Input/output and storage units Keyboard, Mouse , Trackball, Joystick, Digitizing tablet, Scanner, MICR, DCR, BCR, OMR. Light Pen, Touch Screen, Monitors – characteristics and types of Monitor.

UNIT – III **Marks: 10**

Printer's and it's types, characteristics Plotter sound card and speakers, storage fundamental- primary VS Secondary data storage.

UNIT – IV **Marks: 10**

Software and it's need, Type of software operating system, features and characteristics, assemblers, compilers and Interpreter.

UNIT- V **Marks: 10**

Programming Languages –Machine, assembly, High Level, 4GL, Characteristics, Limitations, 4TML, HTTP, WWW, E- mail advantages and disadvantages.

HM-304 Explosion & Fire Dynamics

Unit 1: Introduction to Explosion Characteristics:
1. Background / introduction-a. Burchfield explosion case study. Other similar explosion incidents
2. Explosion hazards, 3. Stoichiometry for gases-a. Introduction. Calculation for air,c. Calculation for O2,4. Stoichiometry for general hydrocarbons and wood (Air to fuel ratio), 5. Application of stoichiometry-a. Naphtha storage tank example, b. Burner startup. Boiler firebox explosion.

Unit 2: Flammability limits and Theories:
1. Lean limit and Rich limit, 2. LEL & UEL measurement techniques and equipments, 3. Minimum ignition energy, 4. Relation between auto-ignition temperature and flash point, 5. Effect of temperature and pressure on flash point, 6. Classification of flammable materials, 7. Vapour tank explosion, a. TWA flight 800 Disaster.

Unit 3: Explosion Prevention:
1. Explosion prevention techniques-a. Ventilation. Separation. Physical barriers. Alternative techniques,2. Preventing the formation of explosive atmosphere,

Unit 4: Explosion Protection:
3. Explosion protection systems-a. Protection techniques-i.Containment, ii.Isolation, iii.Suppression, iv.Venting, b.Ventilation for explosion protection system, c. Explosion protection using inert gases, 4. Flame arrestors and quenching distance

Unit 5: Fire Dynamics: 1. Specific heat capacity-a. ΔHc Air, ΔHc O2**,** 2. Radiation**,** 3. Flame spread-a. Solid surface**,** b. Liquid surfaces**,** c. O2 enriched atmosphere**,** 4. Phases of fire development-a. Smouldering combustion**,** b. Spontaneous ignition**,** c. Flashover**,** d. Backdraught**,** 5. Compartment fires and unconfined fires.-a. Enclosures**,** b. Phases of fire development and growth period**,** c. Flashover and fully developed fire**,** 6. Human behavior in fire-a. Movement speeds and flow rates**,** b. Motivation to evacuate**,** 7. Causes of delay before evacuation**.**

References:
1. An introduction to fire dynamics – Dougal Drysdale
2. Enclosed Fire Dynamics – Bjorn karlsson, Jammes G Quintiere.

BSFSHM- 305 Fire Safety Design

Unit 1: Sprinkler Design: 1. Introduction to Standards used in India and Abroad-I. TAC**,** II. IS III. NFPA 13, IV. BS EN 12845: 2004, 2. Types of sprinkler systems, Types by operation, 1. Wet
2. Dry, 3. Pre – action, 4. Deluge, Types of Layout-I. Centre Fed, I. End Fed, III. Grid, IV. Loop
3. Design and Layout-I. Components of Sprinklers system, II.Types of Sprinkler Head, III. Deflector Plates, IV. Effective Ranges of a Sprinkler and the Whole System,4. Hydraulic Calculations-
I. Hydraulic Calculations, II. K – Factor, 5. Pump Capacity & Water Supply & Storage

Unit 2: Detection & Warning Systems, Emergency lighting: 1. Detection and warning systems-a. Intro to types of systems**,** b. Automatic fire detection and principles of operation**,** c. Smoke, Radiation and Heat Detectors, Line Detectors, Beam Detectors.**,** d. Detector Positioning**,** e. Control Panel & its Functions**,**2. Emergency lighting-a. Minimum Illuminance level**,** b. Defined escape routes/ undefined routes**,** c. Identification of escape routes and signs**,** d. Emergency lighting design**,** e. Sighting of essential escape lighting and additional escape lighting

Unit 3: Smoke Control Systems (Ventilation and Pressurization): 1. Introduction**,** 2. Essential features of smoke ventilation system**,** 3. Forces responsible for smoke movement.**,** 4. Effect of wind, stack effect**,** 5. Natural, mechanical and tactical ventilation**,** 6. Impulse and extraction fan
7. Basics of pressurization, 8. Where pressurization is used

Unit 4: Gaseous System: 1. CO2 Flooding systems and designing**,** 2. FM 200.

Unit 5: DCP System: DCP systems and design.

References :

1. Approved document A – U.K.
2. Approved Document B – U.K.
3. British Standard 9999
4. Tariff Advisory Committee
5. NFPA fire design engineering

BSFSHM- 306 Salvage and Fire Accident Investigation

Unit 1: Concepts of Salvage at Planning stage, Salvage Operation and difficulties encountered. Various items of equipment necessary in salvage operation.

Unit 2: Evaluation of fire situation- Fire Loss Calculation, Flame Temp. Measurement, Calculation for heat release rate, Salvage operation in different types of occupancies slick Hotel, Hospitals, Departmental Stores and Basement god owns etc.

Unit 3: Follow up action and Investigation of Fire Situation such as Structural Fire, Wild Fire and Automobile Fire etc.

Unit 4: Case Studies of Salvage operations in different types of occupancy.

Unit 5: Elementary of Fire Investigation-1.Legal implications of fire investigation, 2. What is accident investigation and its importance, 3.Accident investigation methodology, 4. Management of incident and collection of information--a. Role of investigator. Evidence at the scene, c. Witness statements and misleading information. Locating seats of fire, e. Silent witness. Documenting the scene – investigation report, g. protecting the crime scene-i. During fire fighting, ii. During investigation, h. Sequence of documents,5. Basic steps for accident investigation

References:

1. Manual of Firemanship, Part 6-A by H.M.S.O.
2. Report and Accounts by Fire Salvage Association of Liverpool Limited.
3. The Principles and Practice of Fire Salvage Operation by Fire Salvage association.
4. Loss prevention in Process of Industries, Vol. 1, 2 & 3, Frank P. Lees.
5. Power Plant Engineering – Dr. Mahesh Verma

BSFSHM- 307 Disaster Management

Unit 1: Types & consequence of major accident hazards, Role of management, Local authorities and public, Disaster Management Cycle Prevention, Mitigation, Preparedness, Disaster impact, Response, Restoration, Reconstruction, Onsite & offsite emergency planning; Emergency preparedness, rehearsal & exercises.

Unit 2: Role of Insurance in Disaster Management, Role of International co-operation (i.e. NGO & UN Agencies), affected factors on environment due to disaster. Need for National Capacity Building and Disaster Knowledge Network.

Unit 3: The Disaster Management Act:: Need for technological input in disaster mitigation, community based disaster preparedness program; Preparation of Disaster Management; Plan Early Warning System; Role of Information Technology (IT)

Unit 4: Natural Disaster like Earthquake, Mine fire, flood etc, Man-Made Disaster Industrial Disaster due to toxic gas release, Fire or Explosion; Case Study.

Unit 5: Accident related Disasters (Forest fires, Air, road, & Rail Accidents, Rural & Urban Fires, Oil Spills, Major building collapse etc. Community based Disaster preparedness program.

References: -

1. Disaster Management Act 2005
2. Industrial Security Management S.C. Dey
3. Encyclopedia of occupational Health & Safety (OSHA) IV edition.
4. Safe Handling of Hazardous Chemicals by Rohatgi.
5. Industrial Fire Hazards Hand Book (NFPA)
6. Major Hazard Control I.L.O. Geneva.
7. Chemical process safety Daniel. A. Crawl, Joseph F Louver.
8. Madhya Pradesh Control of Industrial Major Accident Hazards rules 1999.

BSFSHM-308 Combustion Products & Its effects on Life Safety

Unit 1: Combustion Fundamentals: Pyrolysis and combustion**,** Combustion products generation from fires and industries**,** Products of combustion and its individual effects and toxic properties**,** Monitoring equipments

Unit 2: Effects of Combustion products on environment and human health: Effects on environment**,** Effects on Humans**,** Effects from inhalation and indirect consumption

Unit 3: Prevention measures and suppression of toxic smoke generation: Prevention of toxic effects**,** Carbon Dioxide**,** Carbon Monoxide**,** Sulphur oxides**,** Nitrogen oxides**,** Lead

Unit 4: Physiological effects of combustion products and its prevention: Effects on fire fighters and victims of fire**,** Effects of Irritant and non-irritant smoke on fire fighters**,** Effects of Asphyxiation from combustion products**.**

Unit-5: Combustion Products: Understandings the hazards to human of Smoke, Carbon monoxide, hydrogen cyanide, hydrogen sulphide & carbon di oxide, toxicity of fire products Evaluation of smoke Toxicity & various models.

References:

1. Combustion by products and Their Health Effects: Summary of the 10th International Congress
2. Toxic Air, The case of cleaning up coal fired power plants, American Lung Association
3. Environmental effects of Toxic materials from Oil and Gas Combustion by Joao Vicente de Assuncao.
4. Toxicity of Plastics and Rubber in Fire, by P J Fardell
5. Physiological effects of combustion products, hazards of combustion products, by David Purser.

BSFSHM- 309 Industrial Hygiene & Occupational Health

Unit 1: Basic concepts of Industrial Hygiene, Environmental factors of stress: Chemical Hazards, Physical Ergonomically Biological Hazards, Threshold limit values (TLV) Short term exposure limit (STEL), Maximum Tolerable exposure Limit (MTEL), LC-50, LD-50, MSDS of Hazardous chemicals.

Unit 2: Recognition of hazards: Industrial toxicology, gases, vapors, solvent, dust, fibers, particulates, Industrial noise, Ionizing & non-Ionizing radiation thermal, Ergonomics.

Unit 3:Evaluation of hazard: General principals, Air sampling, Analysis, methods of air sampling various equipments for sampling, direct reading instruments for gases, vapors and particulates, Asbestos fibers, sampling & analysis.

Unit 4: Control of hazards: Methods of control local exhaust ventilation, dilution ventilation of Industrial work places, respiratory protection, ventilation norms requirements & measurements,.

Unit 5: Occupational health: Occupational diseases of skin, respiratory system, diseases from metals, pesticides, solvents & gases occupational cancer, Biological Monitoring.

References: -

1. Fundamentals of Industrial Hygiene by Barbara A. Plog & particia J. Quinlan.
2. Safety at work by John ridby & John Channing.
3. Occupational Health & Safety in manufacturing Industries M K Potty.
4. Diseases of occupation D. Hunter.
5. Code of Practice for Hazardous goods by NFPA