Faculty of Engineering and Technology

P.K.University

Shivpuri (MP)

Evaluation Scheme & Syllabus

Diploma in Automobile Engineering

(III Semester)

(Effective from session 2025-26)

EVALUATION SCHEME

DIPLOMA –AUTOMOBILE ENGINEERING (3rd SEM)

Study And Evaluation Scheme For Diploma Automobile Engineering													
SEMESTER-III													
SUBJECT CODE	SUBJECTS NAME	STUDY SCHEME Periods/Week			Credits	MARKS IN EVALUATION SCHEME						Total Marks Of Internal & External
						INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
DFUNCAU301	Functional Communication	3	0	0	3	30	-	30	70	-	70	100
DAPPLAU302	Applied Mathematics-III	3	1	0	4	30	-	30	70	-	70	100
DENGGAU303	Engg. Materials & Material Science	3	0	0	3	30	-	30	70	-	70	100
DTHERAU304	Thermal Engineering	3	1	0	4	30	-	30	70	-	70	100
DMANUAU305	Manufacturing Processes	3	0	0	3	30	-	30	70	-	70	100
DTHERAU306	Thermal Engineering Lab	0	0	2	1	-	25	25	-	25	25	50
DFUNCAU307	Functional Communication Lab	0	0	2	1	-	25	25	-	25	25	50
DMANUAU308	Manufacturing Process Lab	0	0	2	1	-	25	25	-	25	25	50
DCOMPAU309	Computer Application Lab	0	0	4	2	-	25	25	-	25	25	50
	Total	15	2	10	22	150	100	250	350	100	450	700

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DFUNCAU301:Functional Communication

L	T	P
3	0	0

Section "A" (English)

Text Lessons

Unit I. On Communication
Unit.II Exploring Space
Unit.III Sir C.V. Raman
Unit.IV Professional Development of Technicians
Unit.V Buying a Second Hand Bicycle
Unit.VI Leadership and Supervision
Unit.VII First Aid
Unit.VIII The Romanance of Reading
Unit.IX No Escape from Computers
Unit.X Bureau of Indian Standards

Section "B" Hindi

1– स्वरोजगार
2– भारतीय वैज्ञानिकों एवं तकनीकियों का भारत के विकास में योगदान
3– ग्राम्य विकास
4– परिवार नियोजन
5– सामाजिक संस्थायें
6– नियोजन और जन कल्याण
7– भारत में प्रौद्यौगिकी के विकास का इतिहास
8– हरित कांन्ति
9– पर्यावरण एवं मानव प्रदूषण
10– श्रमिक कल्याण
11– भारत में श्रमिक आन्दोलन

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L	T	P
3	1	0

DAPPLAU302: APPLIED MATHEMATICS - II

1. MATRICES :(12 Marks)

1.1 Algebra of Matrices, Inverse : Addition, Multiplication of matrices, Null matrix and a unit matrix, Square matrix, Symmetric, Skew symmetric, Hermitian, Skew hermit ion, Orthogonal, Unitary, diagonal and Triangular matrix, Determinant of a matrix. Definition and Computation of inverse of a matrix.

1.2 Elementry Row/Column Transformation : Meaning and use in computing inverse and rank of a matrix.

1.3 Linear Dependence, Rank of a Matrix: Linear dependence/independence of vectors, Definition and computation of a rank of matrix. Computing rank through determinants, Elementary row transformation and through the concept of a set of independent vectors, Consistency of equations.

1.4 Eigen Pairs, Cayley-Hamilton Theorem : Definition and evaluation of eign values and eign vectors of a matrix of order two and three, Cayley-Hamilton theorem (without Proof) and its verification, Use in finding inverse and powers of a matrix.

2. DIFFERENTIAL CALCULUS :(10 Marks)

2.1 Function of two variables, identification of surfaces in space, coincides
2.2 Partial Differentiation : Directional derivative, Gradient, Use of gradient f, Partial derivatives, Chain rule, Higher order derivatives, Eulens theorem for homogeneous functions, Jacobians.
2.3 Vector Calculus : Vector function, Introduction to double and triple integral, differentiation and integration of vector functions, gradient, divergence and curl, differential derivatives.

3. DIFFERENTIAL EQUATION :(10 Marks)

3.1 Formation, Order, Degree, Types, Solution: Formation of differential equations through physical, geometrical, mechanical and electrical considerations, Order, Degree of a differential equation, Linear, Nonlinear equation.

3.2 First Order Equations: Variable separable, equations reducible to separable forms, Homogeneous equations, equations reducible to homogeneous forms, Linear and Bernoulli form exact equation and their solutions.

3.3 Higher Order Linear Equation: Property of solution, Linear differential equation with constant coefficients (PI for X=eax, Sin ax, Cos ax, Xn, eaxV, XV.

3.4 Simple Applications : LCR circuit, Motion under gravity, Newton's law of cooling, radioactive decay, Population growth, Force vibration of a mass point attached to spring with and without damping effect. Equivalence of electrical and mechanical system

4. INTEGRAL CALCULUS - II: (12 Marks)

4.1 Beta and Gamma Functions : Definition, Use, Relation between the two, their use in evaluating integrals.

4.2 Fourier Series : Fourier series of f(x),-n<x

4.3 Laplace Transform : Definition, Basic theorem and properties, Unit step and Periodic functions, inverse Laplace transform, Solution of ordinary differential equations.

5. PROBABILITY AND STATISTICS :(6 Marks)

5.1 Probability: Introduction, Addition and Multiplication theorem and simple problem.

5.2 Distribution: Discrete and continuous distribution, Binomial Distribution, Poisson Distribution, Normal Distribution.

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3	0	0

DAPPLAU303: MATERIALS & MATERIAL SCIENCE

DETAILED CONTENTS

1. GENERAL: Brief introduction to the subject metallurgy and its scope in engineering field, classification of materials of industrial importance. Their chemical thermal, electrical, magnetic, mechanical and technogical properties and their selection criteria for use in industry.

2. STRUCTURE OF METALS AND THEIR DEFORMATION: Structure of metals and its relation to their physicalmechanical and technological properties. Elementary idea of arrangement of atoms in metals, molecular structures crystal structures and crystal imperfactions. Deformation of metals, effects of cold and hot working operations over them. Recovery recrystallisation and grain growth, solid solutions, alloys and inter metallic compounds, alotropy of metals, effect of grain size on properties of metals. Corrosion its causes and prevention.

3. PROPERTIES AND USAGE OF METALS:

(1) (a) Ferrous Metals. (b) Non Ferrous Metals.

(2) Nonmetallic Materials.

3.1. METALS:

(a) Ferrous Metals: (i) Classification of iron and steel. Sources of iron ores and places of availability. Outline of manufacture of pig iron, wrought iron, cast iron and steel. (Flow diagram only)

(ii) Cast iron: Types as per I.S. - White, malleable, grey mottled, modular and alloy, properties and common uses.

(iii) Classification of steels according to carbon content and according to use as per I.S. Mechanical properties of various steels and their uses. Name and places of steel plant in India. Availability of various section of steel in market, its forms and specifications.

(iv) Alloy Steel : Effect of alloying various elements, viz Cr, Ni, Co, V, W, Mo, Si and Mn on mechanical properties of steel, Common alloy steels, viz, (a) Ni-Steel (b) Ni-Cr-steel (c) Tungsten Steel (d) Cobalt steel (e) Stainless steel (f) Tool steel- High Carbon Steel, High Speed tool Steel, Satellite Metal, Tungsten Carbide Diamonds. (g) Silicon magnese steel (h) Spring steel (i) Heat resisting alloy steels (Nimonic steels). (j) Impact hardening steel (B) Non-ferrous Materials: (i) Important ores and their metal content, outline of manufacturing methods, trade names, properties (Phy/Mech./Elect.) and use of the following metals: Aluminium, Zinc, Copper, Tin, Silver, Lead. (ii) Base metal with principle alloying elements (I.S.I. specification). Improtant properties and use of the

following alloys: (a) Aluminium Alloys: Aluminium-Copper alloy, Al, Zn alloy, Aluminium- Silica Alloy-Al-Ni-Alloy, Duralumnium-derived alloys (R.R. and Y-alloy).
(b) Copper Alloys: Brass, Bronze, Gun metal, Phosphor Bronze, Aluminium Bronze, Ni Bronze.
(c) Nickel Silver: Nickel-Copper Alloy (monel metal) inconel, Nickel, Silver.
(d) Bearing Metals: Lead base alloys, tin base alloys. (White metals or babbit metals) Copper base alloys. (e) Solders: Solders-(Lead, Tin solder, Plumber solder, Tinman's solder or Tin solder) Silver solder, Brazing alloys (spelter), Inconel alloys.

3.2. NON-METALIC MATERIALS:

(a) Timber: Conversion of Timber: Its meaning necessity, Seasoning of timber, Preservation of Timber : Types of preservation, Methods of application, Defects in timber, Surface treatment, Soaking treatment, Hot and Cold treatment; Common Indian timber specilic uses, properties identification, units of purchase. Brief study of produces of Timber, Plywood, Hard board, Batten Board, Veneer board.

(b) Plastic and Other Synthetic Materials: Plastics-Improtant sources-Natural and Synthetic, Classification, thermoset and thermoplastic, Various trade names, Important Properties and engineering use of plastics. Market forms-Pallets, Granules, Powder and Liquid forms; Uses of Sungloss rexin, Linoleum, Plastic coated paper, Fibres-Important sources. Inorganic fibres, Natural Organic Fibres and Synthetic organic fibre and their use.

(c) Paints, Enamels, Varnishes and Lacquers: Paints and Enamels-types, its purpose, essential ingredients and their role, characteristics of a good paints and enamel, Selection of different types of paints, varnishes from manufacture catalouge.

(d) Heat Insulating Materials: Classification of heat: Insulating material, properties and uses of China clay, Cork, Slagwool, Glass wool, Thermocole,Puf, Properties and uses of asbestos as filler material.

(e) Electrical Insulating Materials: Classification of electrical insulating materials, properties and use of-China clay, Leather, Prespan paper, empire cloth masonite, Bakelite, Ebonite, Fibre, Mica, Wood Wool, Glass wool, Rubber, Felt, Insulating oil and Varnish and Enamel paint. Electrical resistance and fuse materials.

(f) Hardwares: General specification, uses and methods of storage of G.I. and C.I. steel, Copper, A.C. pressure conduits, R.C.C. spun, P.V.C. pipes and their uses. General sheets specification (I.S.) and uses. Method of storage of G.I. sheets, M.S. sheets, General specification of pipe fittings viz. Elbow, Tee, Bend, Crosses and Sockets. General specification and use of wire nails, wood screws and door hinges, toggle bolts, sliding bolts.

4. IDENTIFICATION AND TESTING OF METAL ALLOYS: Selection, specification forms and availability of materials. Testing of materials (Destructive and non- destructive), Identification of metal by giving mini project.

5. HEAT TREATMENT OF METALS: Elementary concept, purpose, Iron-carbon equilibrium diagram. T.T.T. or 'S' curve in steels and its significance, micro structure of steels and martensitic transformation (elementary idea). Hardening, Tempering, Annealing, Normalising and case

hardening. Ageing, Various temperature ranges for different metals and alloy (From heat treatment hand book)

6. MISCELLANEOUS MATERIALS: Important properties, characteristics and use of the following materials. (a) Abrasives-Natural and Manufactured, sand stone, emery and corrundum, diamond, garnet, silicon carbide, Boron carbide, aluminum oxide, anyother abrasives qualities of good abrasive.

(b) Celluloid or Xylomite

(c) Felt

(d) Magnetic Materials

(e) Mica

(f) Refractory Materials-Fire clay, Dolomite, Magnete, Poreclain, Fire bricks and their uses

(g) Jointing Materials-Glues and Adhesives, Cements Pyroxylene cement, Rubber cement, Magnestic cement.

(h) Composite Materials : Introduction to polymers of metal matrix composite, Carbon fibre, Glass fibre (i) Germenium alloys (metal glasses)

(j) Source of procurement of various Ferrous and non- ferrous and composite materials

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DTHERAU304: THERMAL ENGINEERING

1. FUNDAMENTAL OF THERMODYNAMICS: Definition, concept of thermodynamic system and surroundings. Closed system, open system, isolated system, thermodynamics definition of work. Zeroth low of thermodynamics. First law of thermodynamics for cyclic and non cyclic processes. Idea of internal energy and enthalpy. Thermodynamic processes - constant volume, constant pressure, constant temperature (Isothermal) processes, adiabatic process polytrophic process, their representation on P-V diagram and calculation of work done. Application of the first law of these process. Simple numerical problems. Second law of thermodynamic concept of perpetual motion machine of first order and that of second order. Concept of heat engine, heat pump and refrigerator. Carnot cycle efficiency for heat engine and cop for refrigerator and heat pump. ENTROPY - its physical concept and significance, reversibility and efficiency, Irreversibility and entropy. Expression for change of entropy in various thermodynamic processes. Simple numerical problems concerning the above.

2. PROPERTIES OF STEAM: Idea of steam generation beginning from heating of water at 0oC to its complete formation into saturated steam. Pressure- temperature curve for steam. Idea of dry saturated steam, wet steam and its dryness fraction, super heated steam and its degree of super heat. Enthalpy, entropy, specific volume and saturation pressure and temperature of steam. Use of steam table and mollier chart. Simple numerical problems.

3. STEAM GENERATORS: Types of steam generators - Low pressure and High pressure boilers, Modern high pressure high discharge boiler - Stirling boiler, Lamont, Loefflor, Benson, Velox, ramsin and Schmidi-Hartmann boiler, Computer controlled accessories, Equivalent evaporation, Boiler performance efficiency.

4. A STEAM TURBINE: Classification, details of turbine, working principle of impulse and reaction turbine, compounding methods of steam turbine, efficiency bleeding, concept of steam nozzles, governing of turbine.

B. STEAM CONDENSER: Principle of operation, classification, A brief concept of condenser details.

5. GAS TURBINE : Elements of gas turbine, working principle, fuel and fuel system, open and close cycle, methods of testing, operating characteristics, Atkinson cycle, Brayton cycle, Heat exchanger, Inter cooler, Reheater, Applications, Performance. Brief concept of heat exchanger.

6. AIR COMPRESSOR: Definition and their use, Difference between reciprocating and rotary compressor, their types and working work done during compression in single stage and two stage, Heat rejected and inter cooling in tow stage compression, volumetric efficiency, compressor lubrication.

7. THERMAL POWER PLANT : Main parts and working of plant, Thermodynamics cycle, Fuel handling, Combustion and combustion equipments, Problem of ash disposal, Circulating of water schemes and supply of makeup water, Selection of economizer, Super heater, Pre- heater, Feed water heater and dust collector, Steam power plant, Heat balance and efficiency.

8. NUCLEAR POWER PLANT: Elements of nuclear power plant, Types of nuclear reactor, Fuel moderators, Coolants, Controls, Disposal of nuclear wastes, Classification of nuclear power plant, Cost of nuclear power, nuclear fuels.

9. INTEGRAL COMBUSTION PLANT AND ENGINE: Engine classification, Engine cycle, C.I. engine combustion, S.I. engine combustion, Engine structure, Fuel admission system, Air intake system, Engine cooling system, Lubrication system, Engine starting system, I.C. engine in steam plant-Features and working.

10. REFRIGERATION & AIRCONDITIOING SYSTEM: Different types of refrigeration principles and refrigerants. Working of domestic refrigerator. Working of Window/Split type AC system.

11. Introduction to Sterling Engine.

Books and References:

1. Basic and Applied Thermodynamics by PK Nag, MCGRAW HILL INDIA
2. Thermodynamics for Engineers by Kroos & Potter, Cengage Learning
3. Thermodynamics by Shavit and Gutfinger, CRC Press.
4. Thermodynamics- An Engineering Approach by Cengel, MCGRAW HILL INDIA.
5. Basic Engineering Thermodynamics, Joel, Pearson.

List of Practical's

1. Determination of temperature by
    i. Thermo couple
    ii. Pyrometer
2. Study of constructional details and specification of high pressure bioler and sketch (through field visit) 3. Demonstration of mounting and accessories on a boiler for study and sketch (field visit).
4. Performance testing of steam boiler.
5. Study of steam turbines through models and visits.
6. Determination of dryness fraction of wet steam sample.
7. Study and sketching of various hand tools, Lifting tackes, Gadgets used in plant.
8. Study of fuel sypply and lubrication system in I.C. engine.
9. Study of battery ignition system of a multi-cylinder petrol engine stressing on ignition timing, setting fixing order and contact breaker gap adjustment.
10. Determination of B.H.P. for diesel and petrol engine by dynamometer.
11. Morse test on multi-cylinder petrol engine

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DMANUAU305: MANUFACTURING PROCESSES

1. (A)-GENERAL FORMING PROCESSES: Classification and elementary idea of metal forming processes on the basis of the properties of deformability (Plasticity), fusibility and divisibility Viz

Rolling, Forging, Drawing, Extruding, Spinning, Pressing, Punching, Blanking.

(B)-WELDING:

(I) Weld edge preparation, Introduction to various welding processes with procedure equipments and applications such as
(i) Electric arc welding. (ii) Resistance welding-Spot welding, Flash butt, Percussion welding. (iii) Thermit welding. (iv) Carbon arc welding (v) Metal-Inert-Gas welding (MIG). (vi) Tungsten arc welding (TIG). (vii) Atomic Hydrogen arc welding. (viii) Stud welding. (ix) Laser Beam, Electron Beam Welding, Explosion Welding, Ultrasonic Welding. (x) Under water welding (xi) Submerged Arc welding
(II) WELDING: Definition, arc initiation, arc structures, types of arc, metal transfer characteristics and influencing parameters, weld bead geometry, various types of electrodes used in various processes. Selection of electrode from catalogue, current and voltage setting from welder's hand book.

(III) WELDING OF SPECIAL MATERIALS: (i) Welding of plastics, equipment, filler, rods, weld ability, procedures and precautions. (ii) Welding of Grey Cast Iron, shielded metal arc gas welding procedures. (iii) Welding of Aluminum, Argon arc and gas welding procedures. (iv) Welding of copper, Brass and Bronze, Gas shielded metallic arc welding, TIG., Oxy-acetylene method. (v) Welding of Alloy steels welding, Stainless steel, welding by oxyacetylene process, MIG, TIG. Specification of electrode as per latest I.S. code.

(IV) TESTING OF WELDS & RELEVENT WELDING CODES: (a) Destructive methods. (b) Non destructive methods-visual, X-ray, Gamma-ray, Magnetic particles, flaw detection, fluorescent, dye penetration and ultrasonic testing. (V) COST ESTIMATION OF WELDING : Material cost, Fabrication cost, Preparation cost, Welding cost and Finishing cost, Over head cost, Cumulative effect of poor practices on cost, Calculation of cost of welding gas consumption and welding electrodes.

2. FOUNDRY PRACTICE:

(A) PATTERN AND MOULDING: The pattern materials used, Types of patterns, Allowances and pattern layout, Colour scheme pattern defects, Types of cores and their utility. Moulding Processes: Classification of mould materials according to characteristics, Types of sands and their important test, parting powders and liquids. Sand mixing and preparation, Moulding defects.

(B) MELTING AND POURING: Fuels and metallic materials used in boundary. Melting furnaces used in foundary such as pit furnace, Tilting and cupola furnaces, metals and alloys. Additions to molten metal, Closing and pouring of the moulds. Coring-up, venting and closing, use of ladles, spur and risers, Defects due to closing and spuring. Basic idea of fettling operations. Surface treatment, Salvaging of castings, Factors determining soundness of casting. Handling of molten metal from furnace to mould.

(C) SPECIAL CASTING: Elementary idea of special casting processes-Shell mould casting, die casting, investment mould casting, centrifugal and continuous casting full mould casting. Elementary idea of mechanization of foundries.

(D) ESTIMATING AND COSTING : Calculation of material cost for casting and Forging.

3. POWDER METALLURGY: Introduction, principle, scope and names of processes. Production of metal powders, compaction, sintering and sizing. Self lubricated bearings. Advantages of the process and its limitations.

4. MODERN MACHINING PROCESS: Ultrasonic Machining(USM), Electro Chemical Machining (ECM), Electro Chemical Grinding (ECG), Electrical Discharging Machining(EDM), Laser Beam Machining (LBM), Electron Beam Machining (EBM), Plasma Arc Machining (PAM)

List Of Practical's

I. FOUNDRY PRACTICE (WORKSHOP): Minimum work in each section is indicated against that

1. PATTERN MAKING: (a) Making Patterns (At least two). (i) Solid one piece pattern. (ii) Split two piece pattern. (iii) Split three piece pattern. (iv) Gated pattern. (v) Four Piece pattern. (vi) Sweep pattern. (vii) Skeleton pattern. (viii) Segmental pattern. (b) MAKING CORE BOXES (At Least

2) For: (i) Straight Core Box. (ii) Bent Core Box. (iii)Unbalanced Cores. 2. SAND PREPARATION AND TESTING: (a) Sand Testing (At Least

2 Experiments). (i) Grading (Grain Size). (ii) Determination of Moisture content (iii) Determination of Clay content. (iv) Determination of Permeability for gases. (b) Preparation of : (i) Green Sand Composition. (ii) Dry Sand Composition. (iii) Loam Sand Composition. (iv) Oil Sand for Cores.

3. MOULDING: (a) Making at least 8 sands moulds of different forms with different types of pattern using. (i) Floor Moulding. (ii) Two Box Moulding. (iii)Three Box (or more) Moulding.

(b) At least one of the following : (i) Making and setting of cores of different types. (ii) Making one shell mould apparatus.

4. MELTING AND POURING: (Each to be demonstrated at least once in the session).

(a) Demonstration of Melting of cast iron in

(i) Pit Furnace.

ii) Cupola.

(b) Demonstration of melting a Non-Ferrous metal in :

(i) Pit Furnace.

(ii) Tilting Furnace.

(c) Pouring of Metals in Moulds (Ferrous and Non Ferrous)

.

5. CLEANING, INSPECTION AND NON DESTRUCHIVE TESTING:

(a) Shaking,cleaning and fettling of casting (At least 2 Casting).

(b) (i) Inspection of cast component (visual) and preparing inspection report (At least one report).

(ii) Establishing cause of Defects seen (At least one cause).

(iii) Dye penetration test for casting

(iv) Magnetic flw detection test/Ultra sound flaw detection test for castings.

6. CASE STUDY OF: At least 2 sand casting products from sand preparation, pattern layout to final finished casting by shell moulding, centrifugal casting, investment casting and continuous casting.

7. ADVANCE WELDING SHOP : (a) Study of various Gas cutting and welding equipments :- Welding transformer, Generator/rectifier, Gas cylinder, Gas cutting machines, Cutting torches etc., Various electrodes and filler metals and fluxes.

Practice of welding and cutting of different metals by making suitable jobs by different methods :-

1. Arc Welding practice of mild steel (M.S.) and Spot welding on stainless steel jobs.
2. Tig Welding practice of Non-Ferrous metals, like Copper, Brass and Aluminium.
3. Practice of Gas cutting manually.
4. Practice of Gas cutting by cutting machine.
5. Practice of Arc cutting.
6. Study of Welding defects.
7. Inspection and Tests of welded joints.
8. Practice of Spot and Seam welding.
9. Practice of Welding pipe joints, Pipes and Pressure vessels.
10. Exercise on EDM Machine

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DTHERAU306:
THERMAL ENGINEERING LAB

1. Determination of temperature by
 i. Thermo couple
 ii. Pyrometer

2. Study of constructional details and specification of high pressure bioler and sketch (through field visit).

3. Demonstration of mounting and accessories on a boiler for study and sketch (field visit).

4. Performance testing of steam boiler.

5. Study of steam turbines through models and visits.

6. Determination of dryness fraction of wet steam sample.

7. Study and sketching of various hand tools, Lifting tackes, gadgets used in plant.

8. Study of fuel sypply and lubrication system in I.C. engine.

9. Study of battery ignition system of a multi-cylinder petrol engine stressing on ignition timing, setting fixing order and contact breaker gap adjustment.

10. Determination of B.H.P. for diesel and petrol engine by dynamometer
.
11. Morse test on multi-cylinder petrol engine.

12. To prepare heat balance sheet for diesel/petrol engine.

13. Demonstration & study of air conditioning system and domestic refrigerating system.

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DFUNCAU307:
FUNCTIONAL COMMUNICATION LAB

1. **Listening •** The student should be able to listen to a text read aloud in normal speed with
    i. focus on intonation.
    - After listening the student can fill-in-blanks, choose a suitable title, make a
        i. summary, supply required information and be able to answer comprehension
        ii. questions from the passage read aloud.
2. **IMPORTANCE OF LISTENING**, Characteristics of Good and Effective Listener(Is Attentive, Do Not Assume, Listen for Feelings and Facts, Concentrate on the Other Speakers Kindly and Generously, Opportunities)
3. **Speaking •** Reading aloud of dialogues, texts, poems, speeches focusing on intonation.
    - Self-introduction • Role plays on any two-situations. • Telephonic Conversations.
4. **NON-VERBAL COMMUNICATION-** Communication Skills
   Non-Verbal Communication, We Communicate with Our Eyes, Communication with Facial Expression, A Good Gesture, Appearance, Posture and Gait, Proximity and Touch),
5. **Communication Skills ACTIVITIES –**Activities in Making Collages, Making Advertisements, PPT Preparation & Presentation, Speaking -Seminars, Group Discussions, Debates, Extempore Speeches, Listening to an audio clip and telling its Agist, Answering a telephone call, Making enquiries, General tips- Pronunciation, Tone, Pitch, Pace, Volume, relevance, brief, simple Reading Newspaper, Magazines (Current Affairs, Economic magazines, Technical magazines), How to read a report, article, Writing- Resume Writing, Writing joining report, Notice writing, Report making, Proposal writing, Advertisement, Notice for tender, Minutes writing, E-Mail writing, Listening News, Listening to audio clips.(Lecture, poetry, speech, songs),
6. **Body Language skills-**Introduction, What is Body Language , Body Language Parts, Personal Space Distances (Intimate Distance, Personal Distance, Social Distance, Public Distance),
7. **IMPORTANT BODY LANGUAGE SIGNS AND THEIR MEANING**

PERSONALITY DEVELOPMENT

1 Introduction to Personality Development

AIM, Skills, Types of Skills, LIFE SKILLS VS OTHER SKILLS,

Concept of Life Skills. Ten core Life Skills identified by WHO

2. Factors Influencing / Shaping Personality :

Introduction, Physical and Social Factors Influencing / Shaping Personality (Hereditary, Self-Development, Environment, Education, Life-situations) Psychological AND Philosophical Factors Influencing / Shaping Personality (Past Experiences, Dreams and Ambitions, Self-Image, Values)

3. Self Awareness – 1

DIMENSIONS OF SELF AWARENESS (Self Realization, Self Knowledge or Self Exploration, Self Confidence, Self Talk, Self Motivation, Self Esteem, Self Image, Self Control, Self Purpose, Individuality and Uniqueness, Personality, Values, Attitude, Character), SELF REALIZATION AND SELF EXPLORATION THROUGH SWOT ANALYSIS AND JOHARI WINDOW,

4. Self Awareness – 2

SYMPATHY VS EMPATHY AND ALTRUISM,

Importance of Empathizing with Others.

5. Self Awareness – 3

Self-Awareness through Activity, Body Image (What is Body Image, What Decides our Body Image, What is Poor Body Image, What are the Harmful Effects of Poor Body Image), Tackling Poor Body Image(Enhance Self-Esteem, Build Up Critical Thinking, Build up Positive Qualities, Understand Cultural Variation, Dispel Myths, Utilize Life Skills)

1. 6. Change Your Mind Set
2. What is Mindset, HOW TO CHANGE YOUR MINDSET (Get the Best Information Only, Make the best people your Role Model, Examine Your Current Beliefs, Shape Your Mindset with Vision and Goals, Find Your Voice, Protect Your Mindset, Let Go of Comparisons, Put An End To Perfectionism, Look At The Evidence, Redefine What Failure Means, Stop Worrying About What "People" Think)

- Achieving the target

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DMANUAU308:
MANUFACTURING PROCESS LAB

List Of Practical's

I. FOUNDRY PRACTICE (WORKSHOP): Minimum work in each section is indicated :

1. PATTERN MAKING: (a) Making Patterns (At least two). (i) Solid one piece pattern. (ii) Split two piece pattern. (iii) Split three piece pattern. (iv) Gated pattern. (v) Four Piece pattern. (vi) Sweep pattern. (vii) Skeleton pattern. (viii) Segmental pattern. (b) MAKING CORE BOXES (At Least

2) For: (i) Straight Core Box. (ii) Bent Core Box. (iii)Unbalanced Cores. 2. SAND PREPARATION AND TESTING: (a) Sand Testing (At Least

2 Experiments). (i) Grading (Grain Size). (ii) Determination of Moisture content (iii) Determination of Clay content. (iv) Determination of Permeability for gases. (b) Preparation of : (i) Green Sand Composition. (ii) Dry Sand Composition. (iii) Loam Sand Composition. (iv) Oil Sand for Cores.

1. MOULDING: (a) Making at least 8 sands moulds of different forms with different types of pattern using. (i) Floor Moulding. (ii) Two Box Moulding. (iii)Three Box (or more) Moulding. (b) At least one of the following : (i) Making and setting of cores of different types. (ii) Making one shell mould apparatus.

2. MELTING AND POURING: (Each to be demonstrated at least once in the session).

(a) Demonstration of Melting of cast iron in

(i) Pit Furnace.

ii) Cupola.

(b) Demonstration of melting a Non-Ferrous metal in :

(i) Pit Furnace.

(ii) Tilting Furnace.

(c) Pouring of Metals in Moulds (Ferrous and Non Ferrous)

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3. CLEANING, INSPECTION AND NON DESTRUCHIVE TESTING:

(a) Shaking,cleaning and fettling of casting (At least 2 Casting).

(b) (i) Inspection of cast component (visual) and preparing inspection report (At least one report).

(ii) Establishing cause of Defects seen (At least one cause).

(iii) Dye penetration test for casting

(iv) Magnetic flw detection test/Ultra sound flaw detection test for castings.

4. CASE STUDY OF: At least 2 sand casting products from sand preparation, pattern layout to

final finished casting by shell moulding, centrifugal casting, investment casting and continuous casting.

5. ADVANCE WELDING SHOP : (a) Study of various Gas cutting and welding equipments :- Welding transformer, Generator/rectifier, Gas cylinder, Gas cutting machines, Cutting torches etc., Various electrodes and filler metals and fluxes.

Practice of welding and cutting of different metals by making suitable jobs by different methods:-

1. Arc Welding practice of mild steel (M.S.) and Spot welding on stainless steel jobs.
2. Tig Welding practice of Non-Ferrous metals, like Copper, Brass and Aluminium.
3. Practice of Gas cutting manually.
4. Practice of Gas cutting by cutting machine.
5. Practice of Arc cutting.
6. Study of Welding defects.
7. Inspection and Tests of welded joints.
8. Practice of Spot and Seam welding.
9. Practice of Welding pipe joints, Pipes and Pressure vessels.
10. Exercise on EDM Machine

Department Of Automobile Engineering

(Faculty of Engineering & Technology)

P.K. University, Shivpuri (MP)

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DCOMPAU309:
COMPUTER APPLICATION LAB

List of Practicals:

1. Practice on utility commands in DOS.
2. Composing, Correcting, Formatting and Article (Letter/Essay/ Report) on Word Processing tool Word and taking its print out.
3. Creating, editing, modifying tables in Database tool.
4. Creating labels, report, generation of simple forms in Database tool.
5. Creating simple spread sheet, using in built functions in Worksheet tool..
6. Creating simple presentation.
7. Creating mail ID, Checking mail box, sending/replying e- mails.
8. Surfing web sites, using search engines.