SYLLABUS 2ND SEMESTER

SECOND SEMESTER (GARMENTS)

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				
						Theory		Practical		Total
						Cont. assess.	Final exam.	Cont. assess.	Final exam.	
1	1911	Textile Raw Materials - I	2	0	2	20	80	-	-	100
2	5022	Sewing Practice	2	6	4	20	80	50	50	200
3	7011	Basic Workshop Practice	0	6	2	-	-	50	50	100
4	5921	Mathematics – II	3	3	4	30	120	50	-	200
5	5912	Physics-I	3	3	4	30	120	25	25	200
6	5722	English – II	2	2	3	20	80	25	25	150
7	5812	Physical Education, Life Skill Development	0	2	1	-	-	25	25	50
		TOTAL	**12**	**22**	**20**	**120**	**480**	**225**	**175**	**1000**

1911 **TEXTILE RAW MATERIALS - I**

T	P	C
2	0	2

AIMS

- To be able to acquire comprehensive knowledge of textile raw materials such as textile fiber, cotton fiber, jute fiber, linex fiber, hemp fiber, sisal fiber, coir fiber and manila fiber.
- To be able to develop knowledge of wool fiber and silk fiber.
- To be able to identify and classify different types of vegetable fibers and animal fibers.

SHORT DESCRIPTION

Vegetable fiber: Textile fiber; Cotton fiber; Jute fiber; Linen fiber; Hemp fiber; Sisal fiber; Coir fiber; Manila fiber.
Animal fiber: Wool fiber; Silk fiber.

VEGETABLE FIBERS

1 Understand the textile fibers.

1.1 Define textile fibers.
1.2 Describe the characteristics of textile fibers.
1.3 Mention the classification of textile fibers with example.
1.4 Identify the sources of textile fibers.
1.5 Mention different products of textile fibers.
1.6 Distinguish between natural and man-made fibers.

2 Understand the cotton fiber.

2.1 Describe the procedure of cultivation of cotton.
2.2 Describe growth and harvesting of cotton.
2.3 Mention the classification of cotton fiber.
2.4 Describe grading of cotton fiber.
2.5 Describe the structure of cotton fiber.
2.6 List chemical compositions of cotton fiber.
2.7 Mention end uses of cotton fiber.
2.8 Describe fiber identification test.

3 Understand the jute fibers.

3.1 Describe the cultivation of jute.
3.2 Describe the harvesting of jute.
3.3 Mention the classification of raw jute.
3.4 Describe jute grading.
3.5 Identify the defects of jute fiber.
3.6 Discuss the structures of jute.
3.7 List the chemical compositions of jute fiber.
3.8 Mention the properties (chemical, physical) of jute fiber.
3.9 Describe identification test (microscopy, burning & tearing) of fiber.
3.10 Mention end uses and diversified uses of jute.

4 Understand the linen fiber.

4.1 Describe the history of linen fiber.
4.2 Describe the cultivation of the linen fiber.
4.3 Mention the classification of linen fiber.
4.4 Describe linen sorting and grading.
4.5 Describe the structure of linen.
4.6 List the chemical compositions of linen.
4.7 Mention physical properties of linen fiber.
4.8 Mention chemical properties of linen fiber.
4.9 List the end uses of linen fiber.

5 Understand the hemp fiber.

5.1 Describe the history of hemp fiber.
5.2 Describe the cultivation of the hemp fiber.
5.3 Mention the classification of hemp fiber.
5.4 Describe hemp sorting and grading.
5.5 Describe the structure of hemp fiber.
5.6 List the chemical compositions of hemp fiber.
5.7 Mention the properties (chemical and physical) of hemp fiber.
5.8 Mention the end uses of hemp fiber.

6 Understand the sisal fiber.

6.1 Describe the history of sisal fiber.
6.2 Describe the cultivation of sisal.
6.3 Identify the sources of sisal.
6.4 List the chemical compositions of sisal fiber.
6.5 Mention the uses of sisal.

7 Understand the coir fiber.

7.1 Describe the history of coir fiber.
7.2 Describe the cultivation of coir fiber.
7.3 Identify the sources of coir fiber.
7.4 List the chemical compositions of coir fiber.
7.5 Mention the end uses of coir.

8 Understand the manila fiber.

8.1 Describe the history of manila fiber.
8.2 Describe the cultivation of manila fiber.
8.3 Identify the sources of manila fiber.
8.4 List the chemical compositions of manila fiber.
8.5 Mention end uses of manilation.

ANIMAL FIBERS

9 Understand the wool fiber.

9.1 Describe wool fiber.
9.2 Describe sources of wool fiber.
9.3 Mention the classification of wool.
9.4 Describe the grading of wool.
9.5 Describe the wool production process.
9.6 Describe the physical construction of wool.
9.7 Describe the chemical compositions of wool.
9.8 Mention the properties (chemical & physical) of wool.
9.9 Define clothing comport of wool.
9.10 Describe the fabric identification of wool.
9.11 Describe different applications and uses of wool fiber.
9.12 Mention the types of wool fiber.

10 Understand the silk fiber.

10.1 Describe the history of silk fiber.
10.2 Describe the growth and sources of silk.
10.3 Mention the classification of silk fiber.
10.4 Describe sericulture process of silk fiber.
10.5 Identify chemical compositions of silk fiber.
10.6 Mention the properties of silk fiber.
10.7 Describe different applications and end uses of silk.

5022 **SEWING PRACTICE – I**

T	P	C
2	6	4

AIMS

To provide the students with an opportunity to develop knowledge, skill and attitude in the area of sewing practice with special emphasis on:

- sewing needles and machines
- stitch and seam
- feed mechanism of sewing.

SHORT DESCRIPTION

Sewing needles; Sewing machines; Stitch; Seam and Feed mechanism of sewing.

Theory:

1 Understand the sewing needles.

1.1 Identify sewing needle indicating their different points.
1.2 Identify needle sizes.
1.3 Describe the features of needle.
1.4 Describe the uses of sewing needle.
1.5 Describe embroidery needle.
1.6 Describe darning needle.
1.7 Describe different cutting points.

2 Understand the sewing machines.

2.1 Describe different parts of sewing machines.
2.2 Name the types of sewing machine.
2.3 Describe the features of flat bed machines.
2.4 Describe the features of raised bed machines.
2.5 Describe the features of post bed machines.
2.6 Describe the features of cylinder bed of sewing machines.
2.7 Mention the functions of plain sewing machine.
2.8 Describe the feed mechanism of plain sewing machine.
2.9 Describe the problems of sewing.

3 Understand the stitch type.

3.1 Describe the features of stitch class 100.
3.2 Describe uses of stitch class 100.
3.3 Describe the features of stitch class 209.
3.4 Describe the uses of stitch class 209.
3.5 Describe the features of stitch class 301.
3.6 Mention the uses of stitch class 301.
3.7 Describe the features of stitch class 401.
3.8 Describe the uses of stitch class 401.
3.9 Describe the features of stitch class 503.
3.10 Describe the uses of stitch class 503.
3.11 Describe the features of stitch class 602.
3.12 Mention the uses of stitch class 602.

4 **Understand the seam.**

4.1 Define seam.
4.2 Mention the classification of seam.
4.3 Mention the properties of seam.
4.4 Describe different types of seam.
4.5 Describe end uses of different seam.

5 Understand the feed mechanism of sewing.

5.1 Mention the necessity of feed mechanism of sewing machine.
5.2 List different types of feed mechanisms.
5.3 Describe different types of feed mechanisms.

Practical:

1. Draw the diagram of lockstitch sewing machine and label the important parts.
2. Practice on sewing with the lockstitch machine using normal rules.
3. Draw straight & parallel lines on the fabric.
4. Draw parallel curve line on the fabric.
5. Draw square on the fabric.
6. Draw triangle on the fabric.
7. Draw circle on the fabric.
8. Draw threading in the lockstitch machine.
9. Draw threading in the overlock machine.
10. Sew fabric with stitch density 10 SPI/12SPI/14SPI.
11. Sew stitch type 100, 209, 301.
12. Sew stitch type 401, 503, 602.
13. Practice on needle changing in different sewing machines.
14. Practice on pressure adjustment in the sewing machines.

7011 BASIC WORKSHOP PRACTICE

T	P	C
0	6	2

AIMS

To provide the students with an opportunity to acquire knowledge and skills to

- perform different metal & fitting works.
- perform basic welding works.
- Use and take care of fitting and welding tools & equipment.

SHORT DESCRIPTION

Fitting : Safety Precautions, Common hand tools; Measuring instruments; Laying out; Sawing, chipping, filing, grinding and finishing, drilling and thread cutting;
Welding: Arc welding; Gas welding; Welding with non-ferrous metal; Resistance welding.

Practical:

1 Understand the safely productions in Fitting & welding shop:

1.1. State general safety precaution in Fitting shop.
1.2. State general safety precaution in welding shop.
1.3. State the importance of good house keeping.

2 Demonstrate the application of basic metal working hand tools.

2.1 Identify common hand tools used for metal and fitting works.
2.2 Check hand tools for sharpness.
2.3 Carryout minor maintenance and sharpening of tools used for fitting works.
2.4 Follow safety procedure during working in the fitting shop.

3 Demonstrate the application of measuring instruments and gages for bench work.

3.1 Identify the measuring and layout tools.
3.2 Take measurement with vernier caliper and micrometer.
3.3 Measure and layout a fitting job.
3.4 Check/measure with gages (sheet and wire gage, drill gage, etc).

4 Demonstrate the application of machines and equipment for fitting works.

4.1 Identify machines and equipment for specific use.
4.2 Take care and maintenance of machines and equipment used in the fitting shop.

5 Show skill in sawing, chipping, filing, drilling and reaming.

5.1 Identify the operations of sawing, chipping, filing, drilling and reaming.
5.2 Perform sawing, chipping, filing, drilling and reaming operations.
5.3 Make a job involving sawing, chipping, filing, drilling and reaming operations (Hinge, Angle gage, etc).
5.4 Follow safety procedures during sawing, chipping, filing, drilling and reaming.

6 Show skill in cutting threads.

6.1 Identify the taps and dies.
6.2 Cut internal and external threads with tap and die.
6.3 Follow safety procedures during working with taps and dies.

7 Show skill in making sheet metal jobs.

7.1 Select appropriate sheet metal.
7.2 Select tools and equipment for sheet metal works.
7.3 Layout the sheet for jobs.(Development Drawing)
7.4 Make wire edge.
7.5 Make seam joint.
7.6 Make mug/measuring can/sugar scoup, etc.

8 Show skill in making pipe and duct.

8.1 Estimate the sheets required for pipe and duct.
8.2 Layout a sheet for pipe and duct.
8.3 Make pipe and duct.
8.4 Take care during making pipe and duct.

9 Show skill in soldering and brazing.

9.1 Select tools and equipment for soldering and brazing.
9.2 Make soldering and brazing joint.
9.3 Take care during soldering and brazing.

10 Show skill in arc welding.

10.1 Select welding tools and equipment.
10.2 Prepare work piece for welding joint.
10.3 Select proper current and voltage for arc welding.
10.4 Select appropriate electrodes.
10.5 Make arc welding joints (Lap, Butt, Tee, Corner, etc.)
10.6 Follow safe working procedures during arc welding.

11 Show skill in welding by gas.

11.1 Select tools and equipment for gas welding and gas cutting.
11.2 Select appropriate filler rod and flux.
11.3 Select appropriate flame for welding and cutting.
11.4 Make gas welding joints (Lap, Butt, Tee, Corner, etc.)
11.5 Follow safe working procedures during arc welding.

12 Show skill in resistance welding.

12.1 Identify the resistance welding machines.
12.2 Identify accessories and tools for resistance welding.
12.3 Make spot welding joints.
12.4 Follow safe working procedures during working with spot welding machine.

5921 **MATHEMATICS – II**

T	P	C
3	3	4

SHORT DESCRIPTION

Algebra: Determinants, Matrix, Partial Fractions, Exponential Series.

Trigonometry: Inverse circular functions, Properties of triangle and solution of triangles.

Menstruation: Area of rectangles, squares, triangles, quadrilaterals, parallelograms, rhombus, trapezium, circle, sector, segment; Volume of rectangular solids, prism, parallelepiped , pyramids, cones , spheres, frustum of pyramid and cone; Area of curved surface of prism. Cylinder cone, pyramid and frustum of cone.

DETAIL DESCRIPTION

ALGEBRA:

1 Apply determinants to solve simultaneous equations.

1.1 Expand a third order determinant.
1.2 Define minor and co-factors.
1.3 State the properties of determinants.
1.4 Solve the problems of determinants.
1.5 Apply Cramer's rule to solve the linear equation.

2 Apply partial fraction to break the numerator and denominator.

2.1 Define matrix, null matrix, unit matrix, square matrix. column matrix, row matrix, inverse matrix, transpose matrix, adjoin matrix, rank of a matrix, singular matrix.
2.2 Explain equality, addition and multiplication of matrix.
2.3 Find the rank of a matrix.
2.4 solve the problems of the following types:
  i) Solve the given set of linear equations with the help of matrix.
  ii) Find the transpose and adjoin matrix of a given matrix.

3 Solve problems using binomial theorem

3.1 Define proper and improper fractions.
3.2 Resolve in to partial fraction of the followings types :
  a) Denominator having a non-repeated linear factor.
  b) Denominator having a repeated linear factor.
  c) Denominator having a quadratic factors.
  d) Denominator having a combination of repeated, non-repeated and quadratic factors.

4 Understand exponential series.

4.1 Define e.
4.2 Prove that e is finite and lies between 2 and 3.
4.3 Prove that $e^x = 1 + \frac{x}{L^1} + \frac{x^2}{L^2} + \frac{x^3}{L^3} + \frac{x^4}{L^4}$ ..... to $\propto$
4.4 Solve problems of the followings types :
  i) $1 + \frac{1}{L^2} + \frac{1}{L^4} + \frac{1}{L^6}$ + ... to $\propto$
  ii) $\frac{1}{L^2} + \frac{1+2}{L^3} + \frac{1+2+3}{L^4} + \frac{1+2+3+4}{L^5}$ + ... to $\propto$

TRIGONOMETRY

5 Apply the concept of inverse circular function.

5.1 Explain the term inverse circular function and principal value of a trigonometrical ratio.
5.2 Deduce mathematically the fundamental relations of different circular functions.
5.3 Convert a given inverse circular function in terms of other functions.
5.4 Prove mathematically

i) $\tan^{-1} x + \tan^{-1} y = \tan^{-1} \frac{x+y}{1-xy}$.

ii) $\tan^{-1} x + \tan^{-1} y + \tan^{-1} z = \tan^{-1} \frac{x+y+z-xyz}{1-xy-yz-zx}$

iii) $\sin^{-1} x + \sin^{-1} y = \sin^{-1} \left(x\sqrt{1-y^2} + y\sqrt{1-x^2}\right)$

iv) $2 \tan^{-1} x = \sin^{-1} \frac{2x}{1+x^2} = \cos^{-1} \frac{1-x^2}{1+x^2} = \tan^{-1} \frac{2x}{1-x^2}$

5.5 Solve problems of the following types.

a) $2 \tan^{-1} \frac{1}{3} + \tan^{-1} \frac{1}{4} = \frac{\pi}{4}$

b) $\cos \tan^{-1} \cot \sin^{-1} x = x$.

c) Prove that the area of the segment cut from a circle of radius r by a chord at a distance d from the centre is given by $K = r^2 \cos^{-1} \frac{d}{r} - d\sqrt{r^2 - d^2}$

6 Apply the principle of properties of triangles.

6.1 Prove the followings identities :

i) $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$.

ii) $a^2 = b^2 + c^2 - 2bc \cos A$

iii) $a = b \cos C - c \cos B$.

v) $\Delta = \frac{1}{2} bc \sin A$.

6.2 Establish the followings.

a) $\tan \frac{A}{2} = \sqrt{\frac{(s-b)(s-c)}{s(s-a)}}$

b) $\tan \frac{B-C}{2} = \frac{b-c}{b+c} \cot \frac{A}{2}$

c) $\Delta = \frac{abc}{4R}$

6.3 Solve the problems of the following types:

i) Prove $\cos (B - C) + \cos A = \frac{bc}{2R}$

ii) An object experiences two forces F_1 and F_2 of magnitude 9 and 13 Newton's with an angle 100^0 between their directions. Find the magnitude of the resultant R.

7 Apply the concept of area of triangle.

7.1 Find the area of triangle in the form,

i) $A = \frac{\sqrt{3}}{4} a^2$, a = length of a side of equilateral triangle.

ii) $A = \frac{c}{4} \sqrt{4a^2 - c^2}$, where a= length of equal sides, c= third side.

iii) $A = \sqrt{s\ (s-a)(s-b)(s-c)}$, where a, b, c = length of the sides of a triangle and 2s is the perimeter of the triangle.

7.2 Use formula in 7.1 to solve problems.

8 Apply the concept of finding areas of quadrilateral & Parallelogram.

8.1 Define quadrilateral & Parallelogram.

8.2 Find the areas of quadrilateral when off sets are given.
8.3 Find the areas of a parallelogram.
8.4 Solve problems using above formulae.

9 Apply the concept of finding areas of rhombus & trapezium.

9.1 Define rhombus & trapezium.
9.2 Find the areas of rhombus when the diagonals are given.
9.3 Find the areas of trapezium in terms of its parallel sides and the perpendicular distance between them.
9.4 Solve problems related to rhombus & trapezium.

10 Apply the concept of finding areas of regular polygon.

10.1 Define a regular polygon.
10.2 Find the area of a regular polygon of n sides, when
i) the length of one side and the radius of inscribed circle are given.
ii) the length of one side and the radius of circumscribed circle are given.
10.3 Find the area of a regular.
a) hexagon
b) octagon
when length of side is given.
10.4 Solve problems of the followings types:
A hexagonal polygon 6 m length of each side has a 20 cm width road surrounded the polygon. Find the area of the road.

11 Understand areas of circle, sector and segment.

11.1 Define circle, circumference, sector and segment.
11.2 Find the circumference and area of a circle when its radius is given.
11.3 Find the area of sector and segment of a circle.
11.4 Solve problems related to the above formulae.

12 Apply the concept of volume of a rectangular solid.

12.1 Define rectangular solid and a cube.
12.2 Find geometrically the volume of a rectangular solid when its length, breadth and height are given.
12.3 Find the volume and diagonal of a cube when side is given.
12.4 Solve problems with the help of 12.2 & 12.3.

13 Apply the concept of the volume of a prism and a parallelepiped.

13.1 Define a prism, parallelepiped and a cylinder.
13.2 Find the volume of prism, parallelepiped and cylinder when base and height are given.
13.3 Solve problems related to 13.2.

14 Apply the concept of the volume of pyramid, cone and sphere.

14.1 Define pyramid, cone and sphere.
14.2 Explain the formula for volume of pyramid, cone and sphere.
14.3 Solve problems related to 14.2.

15 Apply the concept of surface area of prism, cylinder and cone.

15.1 Explain the formulae for areas of curved surfaces of prism cylinder and cone.
15.2 Solve problems related to15.1.

5912 **PHYSICS-I**

T	P	C
3	3	4

OBJECTIVES

- To provide the students a background of basic science i.e. Physics required for understan ding technological subjects.
- To develop a working knowledge of common engineering and industrial materials and to enable to determine through experiments the properties of such materials.
- To develop through experiments an understanding of fundamental scientific concept.
- To develop a basic knowledge and concept of physical properties of common engineering and industrial materials.

SHORT DESCRIPTION

Units; Vector and Scalar quantities; Motion and Equations of motion; Force and Newton's Laws of motion; Gravity and Gravitation; Simple Harmonic motion; Hydrostatics; Surface tension and viscosity ; Pressure, Density and Specific gravity; Sound : Concepts and nature of sound, Velocity of sound, Ultrasonic.

DETAIL DESCRIPTION

Theory :

1. UNITS VECTOR AND SCALAR QUANTITIES

Understand vector and scalar quantities.

1.1 List and Identify the symbols of fundamental SI Unit and some derived SI Unit.
1.2 Define vector quantities with examples.
1.3 Define scalar quantities with examples.
1.4 Show the various presentations of the vector quantities; two & three dimensional position and unit vector.
1.5 Distinguish between vector and scalar quantities.
1.6 Find and explain the resultant of two vectors in different directions.
1.7 Resolve a vector into horizontal & vertical component.
1.8 Explain the dot and cross product of two vectors.
1.9 Define laws of triangle of vector.

2. MOTION AND EQUATIONS OF MOTION

Understand motion and equations of motion.

2.1 Define rest and motion.
2.2 Classify motion.
2.3 Define and explain displacement, speed, velocity, acceleration and retardation.
2.4 Deduce the relationship between displacement, velocity, acceleration and retardation from these definitions.
2.5 Distinguish between (i) speed and velocity (ii) velocity and acceleration.

3. Understand circular motion

3.1 Define circular motion.
3.2 Define angular velocity and linear velocity with their units.
3.3 Deduce the relation between angular velocity and linear velocity.
3.4 Define centripetal and centrifugal force with examples.
3.5 Prove centrifugal force = $\frac{mv^2}{r}$
3.6 Define and explain angular momentum, torque and moment of inertia.
3.7 Calculate the torque and moment of inertia of a revolving body.

4. FORCE AND NEWTON'S LAWS OF MOTION

Understand force.

4.1 Define force.
4.2 Define different units of force and their correlation and also mention the dimension of force.
4.3 Define parallel force and a couple.
4.4 Find out the resultant of parallel forces.
4.5 Define inertia and momentum.
4.6 State the simple units and dimension of momentum.
4.7 State and prove the principles of conservation of momentum.
4.8 State Newton's laws of motion.
4.9 Prove P=mf, from Newton's 2nd law of motion.

5. GRAVITY AND GRAVITATION

Understand gravity and gravitation.

5.1 Define and explain the Kepler's Law.
5.2 Define gravity and gravitation.
5.3 State the laws of gravity and gravitation.
5.4 Define and determine the gravitational constant (G) and also mention its units and dimension.
5.5 Define acceleration due to gravity 'g' and also mention its units and dimension.
5.6 Discuss the variation of 'g' at different places.
5.7 Define mass and weight with their units and dimension.
5.8 Distinguish between mass and weight.
5.9 Define and explain gravitational potential and escape velocity
5.10 State and explain the laws of falling bodies and mention the equation of motion of a body when it is projected vertically upwards or downwards

6. SIMPLE HARMONIC MOTION (SHM)

Understand simple harmonic motion.

6.1. Define simple harmonic motion (SHM).
6.2. State the characteristics of SHM.
6.3. Describe a simple pendulum and a second pendulum.
6.4. Define effective length, amplitude, phase, complete oscillation, period of oscillation, frequency.
6.5. State and explain the laws of simple pendulum.
6.6. Describe a compound pendulum.
6.7. Discuss the conditions under which a pendulum clock will go slow or fast.

7. WORK, POWER AND ENERGY

Understand work, power and energy.

7.1 Define work, power and energy.
7.2 State the units and dimensions of work, power and energy.
7.3 State and prove the principle of the conservation of energy.
7.4 Define potential energy (PE) and kinetic energy (KE).
7.5 Derive the equation of potential and kinetic energy.
7.6 Show that the K.E. gained by a falling body is equal to the P.E. lost by the body.
7.7 Describe transformation of energy and mention the mass-energy relation.
7.8 Recognize that the useful work can be found from:

$$\text{efficiency} = \frac{\text{output work}}{\text{input work}} \times 100.$$

8. ELASTICITY

Understand the concept of elasticity.

8.1 Name some of the general and special properties of matter.
8.2 Define Elasticity and Elastic limit.
8.3 Define perfectly elastic body and perfectly rigid body.
8.4 Define stress and strain with their units and dimensions.
8.5 State and explain the Hook's law.
8.6 Describe various kinds of modulus of elasticity.
8.7 Mention the units and dimensions of modulus of elasticity.
8.8 Define Poisson's ratio and calculate the work done of a elastic body by using young's modulus.

FRICTION

9. Understand Friction

9.1 Define friction.
9.2 Describe the different kinds of friction.
9.3 Define the laws of static friction.
9.4 Define the co-efficient of static friction.
9.5 Describe the angle of static friction and angle of repose.
9.6 Describe the laws of kinetic friction.
9.7 State the co-efficient and angle of kinetic friction.
9.8 Show that the co-efficient of static friction is equal to the tangent of angle of repose.
9.9 Describe an experiment to determine the co-efficient of static friction.
9.10 State the merits and demerits of friction.

10. HYDROSTATICS

Understand behavior of fluids.

10.1 Define pressure as force per unit area and state that it is measured in N/m^2 or Pa (Pascal).
10.2 State characteristics of liquid pressure.
10.2.1 Establish that pressure at a point in a fluid is dependent upon the density of the fluid, the depths in the fluid and acceleration due to gravity.
10.3 Define and explain surface tension and viscosity.
10.4 Calculate the surface tension of a fluid by using capillary tube.

11. DENSITY AND SPECIFIC GRAVITY

Understand density and specific gravity

11.1 State and prove Archimede's Principle.
11.2 Define density and specific gravity.
11.3 State the units of density and specific gravity.
11.4 Distinguish between specific gravity and density.
11.5 Establish the density of water at different temperatures.
11.6 Find out specific gravity of solids and liquids.
11.7

12. SOUND

Understand nature and behavior of sound.

12.1 Identify that sound is produced by vibration and travels through a medium as a longitudinal wave.
12.2 Distinguish between the production and behavior of longitudinal and transverse waves.
12.3 Recognize that sound can be produced of different pitches (frequencies) & that the human ear has an audible frequency range covering approximately 20 Hz to 20 KHz.
12.4 State the approximate frequency range for
  a. infrasonic sound
  b. ultrasonic (supersonic) sound.
12.5 Explain how sound is absorbed, reflected & refracted by different types of surface.
12.6 Describe the practical uses of echo sounding devices.
12.7 Define velocity of sound.
12.8 State the velocity of sound at NTP in still air.
12.9 Compare the effects of pressure, temperature & humidity on the velocity of sound in air.

PRACTICAL

Observations and Measurements

1. Determine accurate diameter/side of an object using vernier calipers.
2. Measure the area of cross section of a wire by micrometer screw gage.
3. Measure the thickness of a glass plate by spherometer.
4. Verify the law of parallelogram of forces by a force board.
5. Draw L-T2 graph and destine the value of “g” by using a simple pendirlum.
6. Determine the coefficient of static friction.
7. Determine Young’s modulus of a steel wire by Searle’s apparatus.
8. Determine gravity of a solid heavier than and insoluble in water by hydrostatic balance.
9. Determine specific gravity of a liquid by specific gravity bottle.
10. Determine velocity of sound by resonance air column method.

5722 **English-II**

T	P	C
2	2	3

OBJECTIVES :

After the completion of the course, learners will be able to develop-

- Reading and writing skills
- Grammatical accuracy with emphasis on spelling & punctuation
- Information Collection
- Creative Writing
- Effective Communication and Correspondence

Contents

Seen Comprehension

Mark-20

Unit	Lesson	Title
Unit-14 Human Resources	3	Enriching the workforce.
Unit-16 Wonders Home and Abroad	1 2	The Sangsad Bhaban The Jamuna Multi-purpose Bridge.
Unit-20 Jobs and professions	2 3	How can I be self-employed? Self-help a key to success.
Unit-21 Globalization	1 3 6	The world as a global village Modern Technology and globalization Globalization and English.

❖ Note: From old syllabus.

A)

Grammar

Mark-20

Unit	Lesson	Title
Unit-one Pronouns and Determiners	3	Determiners
Unit-Eight Direct and Indirect speech	2	Changing speech.
Unit-Twelve Further use of preposition	2	Appropriate prepositions.
Unit-Fourteen Idioms and phrase	9	Some Common Idioms.

❖ Note: From old syllabus.

Communication

Mark-20+5=25

B) Types of formal documentation (in English)

- Application with CV.
- Appointment letter.
- Letter of enquiry, orders, cancellation.
- Letter of compensation and complaint.
- Letter to the print and Electronic media.
- Writing a Bank solvency certificate.
- Official note.
- Memorandum.
- Notice writing.

Composition

Mark-15

Area of interest: With hints/key words

Notional, Social, Political problems: Terrorism, Drug Addiction, Dowry, Load shedding, price-hike, Gender Discrimination, Traffic Jam.

Calamities: Drought, Flood, Cyclone etc.

National Days and Festivals: International Mother Language Day, Independence Day, Victory Day, May Day, Pahela Baisakh.

Scientific Development: Satellite, E-mail, Internet.

Environment pollution: Water, Air, Sound, Global warming.

Heritage Sites: The Sundarbans, National Memorials, Cox`s Bazar Sea Beach.

Industries: Garments, Textile, poultry, Ceramic, Fertilizer.

i)Write a short composition.
ii)Write a report on a situation/event/incident.

Practical

1. Prepare a report visiting different business firms and facilitate the techniques of sales communication.
2. Give advertisement in the dailies on necessary commodities.
3. Make attractive posters for new products.
4. Speaking on a specific situation.
5. Exchange views with target person (s).
6. Introduce one self.
7. Prepare speech.
8. Role playing on telephonic conversation.
9. Choice of profession.
10. Current topics from Newspaper.

Contents for Oral practice

1. Meeting someone.
2. Asking about daily activities.
3. Traveling by bus/train.
4. Going by Taxi.
5. Meeting at rail station/airport.
6. Getting information at the airport.
7. Getting to the Hotel.
8. Asking directions.
9. Finding ones way.
10. Asking the time and calendar.
11. Arriving early or late.
12. Living in as Apartment.
13. Using the telephone.
14. Talking about shopping.
15. Sending and receiving letters.
16. Dinner conversation.
17. Common health problem.
18. Quitting and finding jobs.
19. Office details.
20. Office conversation.

5812 **PHYSICAL EDUCATION AND LIFE SKILL DEVELOPMENT**

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0	2	1

SHORT DESCRIPTION

Warming up; Yoga; Muscle developing with equipment; First aid; Games & sports; life skill development.

DETAIL DESCRIPTION

1. **National Anthem and Assembly**
   - **1.1 Make assembly**
   - **1.2 Recitation of national anthem**
   - **1.3 National anthem in music**
2. **Warming up**
   - 2.1. General Warming-up :
     Head rotation, Hand rotation, Side twisting, Toe touching, Hip rotation, Keen twisting, Ankle twisting, Push up & Sit up.
   - 2.2. Squad Drill :
     Line, File, Attention, Stand at easy, Stand easy, Left turn, Right turn, About turn, Mark time, Quick march, Right wheel, Left wheel, Open order march & Closed order march.
   - 2.3. Specific warming up :
     Legs raising one by one, Legs raising in slanting position, Knee bending and nose touching, Heels raising, Toes touching & Laying position.
   - 2.4. Mass Physical Exercise (Free hand) :
     Hand raising, Side twisting, Front & back bending, Front curl, Straight arms curl two hands, Hands raising overhead and Push up & Push down.
3. **Yoga**
   - 3.1 Dhyanasan :
     Shabasan, Padmasan, Gomukhasan, Sharbangasan, Shirshsan
   - 3.2 Shasthyasan :
     Halasan, Matshasan, Paban Muktasan, Ustrasan
4. **Muscle Developing with equipment**
   - 4.1 Damball :
     Front curl, Hand sidewise stretching, Arms raising overhead.
   - 4.2 Barball :
     Front press, Leg press, Rowing motion with leverage bar.
   - 4.3 Rope climbing :
     Straight way climbing, Leg raising climbing.
   - 4.3 Horizontal bar:
     Chinning the bar front grip, Chinning the bar wide back grip.
   - 4.4 Jogging Machine :
     Slow, medium, and fast running
   - 4.5 Rowing Machine :
5. **Show skill on conversation on day to day life**
   - 5.1 Today's Market price
   - 5.2 Festivals(religious festivals, National festivals)

5.3 Celebration of National days
5.4 Aim of life
5.5 Visited historical places/sites

6. Human relation

6.1 Family relation
6.2 Relation with neighbor
6.3 Humanitarian Service
6.4 Service for handicapped (intelligent, physical, social etc.)
6.5 Service for orphan / Patient

7. Vote of appreciation

7.1 About dress
7.2 For good work
7.3 For good result
7.4 For good news

8. Telephone conversation

8.1 Use of telephone
8.2 Courtesy for using telephone
8.3 Receiving and sending massages through telephone
8.4 Presenting the gist
8.5 Stress Management Habit to be a man of humor
8.6 Positive thinking
8.7 Habit to changing thinking

9 Time Management

9.1 Determine essential time for a task
9.2 Determine delay and unexpected time
9.3 Determine time for daily activities
9.4 Plan for daily activities

10 Interview Technique

10.1 Mental preparation to face an interview
10.2 Selection of dress for interview
10.3 Introducing himself/herself to the interviewer
10.4 Coping interview

11. Team work

11.1 Organized a team
11.2 Selection of team leader
11.3 Distribution to the task to the members
11.4 Accepting opinion of team members
11.5 Completion of task as a team

12 Social work

12.1 Tree plantation
12.2 Community service (Sanitation, pure drinking water, social culture etc.)