BANGLADESH TECHNICAL EDUCATION BOARD
Agargoan, Dhaka-1207.

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM
SYLLABUS (PROBIDHAN-2016)

SURVEYING TECHNOLOGY

TECHNOLOGY CODE: **678**

3rd SEMESTER

DIPLOMA IN ENGINEERING
PROBIDHAN-2016

SURVEYING TECHNOLOGY (678)

THIRD SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				
						Theory		Practical		Total
						Cont. assess	Final exam.	Cont. assess	Final exam.	
1	67831	Leveling	2	3	3	40	60	25	25	150
2	67832	Engineering Drawing CAD-1	1	6	3	20	30	50	50	150
3	65931	Mathematics-3	3	3	4	60	90	50	-	200
4	65722	Communicative English	1	3	2	20	30	50	-	100
5	65913	Chemistry	3	3	4	60	90	25	25	200
6	66822	Electronic Engineering Fundamentals	2	3	3	40	60	25	25	150
7	65812	Physical Education & Life skill Development	0	3	1	-	-	25	25	50
		Total	**12**	**24**	**20**	**240**	**360**	**250**	**150**	**1000**

67831	LEVELING	T	P	C
		2	3	3

AIMS

To Provide the students with on opportunity to acquire knowledge and skills to

- Conduct leveling work.
- Use of all kinds of level.

SHORT DESCRIPTION

- State secondary & tertiary leveling.
- Booking of leveling, Adjustment of level.
- Difficulties and Error in leveling
- Digital leveling

DETAIL DESCRIPTION

Theory :

1. Understand the aspects of tertiary leveling

1. 1 State the meaning of tertiary leveling.
1. 2 Mention the purpose of tertiary leveling.
1. 3 Explain the terms as used in tertiary leveling.
   a. level Surface.
   b. level line.
   c. Horizontal plane.
   d. Horizontal line.
   e. Vertical plane.
   f. Vertical line.
   g. Datum surface.
   h. Datum
   i. Reduced level.
   j. Formation level.
   k. Laser ranging

1.4 Explain the term bench mark.
1.5 Mention the classification Bench Mark,TBMs,PLBMs.
1.6 Compare G.T.S permanent arbitrary and temporary bench mark.

2 Understand the aspects of leveling.

2. 1 State the meaning of secondary leveling.
2. 2 Mention the purpose of secondary leveling.
2.3 State the meaning of precise leveling
2.4 Mention the purpose of precise leveling.
2.5 Compare between tertiary, secondary and precise leveling.

3. Understand the features of leveling instruments.

3.1 Identify the equipment and accessories required for leveling.
3.2 Identify the different types of levels.
3.3 Label different parts of level.
3.4 Describe the construction of following levels :

   a. Auto-set level.
   b. Digital level.

3.5 Define basic terms:

a. Keplar type telescope.
b. Chromatic aberration
c. Spherical aberration.
d. Lens formula.
e. Diaphragms.
f. External and internal focusing telescopes.
g. Deferent type of eye-pieces.
h. Level tubes.

3.6 Mention the purpose of leveling staff.

3.7 Identify different types of leveling staff.

3.8 Mention the procedure of taking staff reading with the help of sop with staff, Target staff and folding staff.

4 Explain the following terms related to leveling:

4.1

a. Line of collimation.
b. Axis of telescope.
c. Axis of bubble tube.
d. Vertical axis.
e. Height of the instrument
f. Line of collimation
g. Focusing.
h. Parallax.

4.2 State the meaning of adjustment of level instruments.

4.3 Mention different kinds of adjustments of level.

4.4 State different steps of temporary adjustments.

5. **Understand the permanent adjustment of level instrument:**

5.1 List the fundamental lines of leveling instrument/

5.2 Explain the relations among the fundamental lines.

5.3 List the permanent adjustments of dumpy level, auto-set level and digital level.

5.4 Mention the procedure of identifying and rectifying the various defects in adjustment of dumpy level,. tilting level, auto-set level and digital level.

5.5 Solve problems on permanent adjustments of the levels (two peg test).

6. Understand the concept of tertiary leveling:

6.1 State the meaning of following terms used in tertiary leveling

a. Back sight, foresight and intermediate sight reading.
b. Change point
c. Station
d. Balancing the sights

6.2 Identify the positions where the instruments to be set on.

6.3 Mention the procedure of holding a leveling staff.

6.4 Mention the procedure of taking staff readings.

6.5 Mention the procedure of tertiary leveling work.

7. Understand the concept booking of staff reading and reduction of level:

7.1 State the necessity of level book.

7.2 Identify different kinds of level book.

7.3 Describe reduction of levels.

7.4 Mention the procedure of booking staff reading in the level book.

7.5 Solve problems on reduction of levels & missing data of level book.

8. Understand various aspects of tertiary leveling:

8.1 List different kinds of tertiary leveling, fly leveling, profile leveling, cross-sectioning, check leveling, barometric leveling, trigonometrically leveling, reciprocate leveling and precise leveling.

8.2 State different kinds of leveling, primary leveling. secondary leveling and tertiary leveling.

8.3 Mention the procedure of fly leveling, profile leveling, cross sectioning, check leveling.
8.4 Mention the procedure of double tertiary leveling.
8.5 Solve problems of fly leveling, profile leveling, cross sectioning and cheek leveling.
8.6 Mention the procedure of reciprocal leveling.
8.7 Mention the procedure of double tertiary leveling.

9. Understand the concept of plotting level sections:

9.1 State the meaning of longitudinal profile of a leveling works.
9.2 State the purpose of plotting long section and cross section of leveling work.
9.3 Explain the various elements of longitudinal section and cross section of leveling works.
9.4 Prepare longitudinal profile and cross profile from given data.
9.5 Mention the procedure of making working profile.

10. Understand the difficulties and errors in leveling:

10.1 Mention the difficulties in leveling.
10.2 Mention the procedure of leveling in the following cases:
a. Ascending and descending a hill.
b. Staff is too near level.
c. Staff is too low or too high.
d. Staff station is along the line & collimation.
e. Board fencing on the alignment.
f. Wall on the alignment.
10.3 List the instrumental natural and personal error in leveling.
10.4 Explain the effect of earth's curvature and refraction of light.
10.5 Solve problems on error due to curvature and refraction.
10.6 Express the derivation of the formula for distance to the visible horizon and dip of the horizon and solve problem on them.
10.7 Explain the common mistakes in leveling.
10.8 Specify the magnitude and permissible limits of closing error.

11. Understand the digital level.

11.1 Define digital level.
11.2 Compare digital level with other common level.
11.3 Describe the component of digital level and function of level.
11.4 Explain the term of display penal.
11.5 Mention the taking procedure of Digital staff

Practical :

1. Demonstrate different components of dumpy level, Auto-set level, Digital level.
2. Adjustment of Dumpy level .
3. Perform adjustment of Auto-set level.
4. Perform the adjustment of digital level.
5. Conduct fly leveling.
6. Conduct differential leveling.
7. Conduct profile leveling.
8. Conduct Cross- sectioning.
9. Conduct spot level sections.
10. Run the levels connecting at least 3 old tertiary B.M.
11. Establish a new tertiary B.M. to safe place.
12. Find out how to transfer level on high building.

Reference Book :

1. Surveying and leveling
   - T. P Kanethker (Vol-1)
2. Surveying and leveling
   - Dr. P.C.Punmia
3. A Text Book of Surveying
   - P.B.Shahani

67832 ENGINEERING DRAWING CAD-I

T	P	C
1	6	3

AIMS

- Create new drawings, open existing drawings and save drawings.
- Create basic geometry and utilize basic editing commands.
- Plot drawing to scale.

SHORT DESCRIPTION

An introduction to computer-aided drafting. Emphasis is placed on drawing setup; creating and modifying geometry; storing and retrieving predefined shapes; placing, rotating, and scaling objects, adding text and dimensions, using levels, coordinate systems, and plot/print to scale.

DETAIL DESCRIPTION

Theory :

1. Introduction & use of Auto CAD

1.1 Define AutoCAD.
1.2 State how to start and exit AutoCAD.
1.3 Name different tools used in AutoCAD.
1.4 State the necessity of drawing units and limits.
1.5 Define a Folder; Create a Shortcut; Copy, Move, Delete and Rename a file.
1.6 Reclaiming a file from the Recycle Bin.
1.7 State The Drawing Editor: The layout Wizard; the command prompt; the
1.8 Explain properties toolbar; Popup (or Pull down) menus.
1.9 Explain SAVE, SAVEAS, CLOSE, OPEN command.
1.10 Mention Renaming and Deleting files from within the AutoCAD Open Dialog Box.
Drawing Setup

2. Operation in Auto CAD Environment

2.1 .Explain the *Cartesian Coordinate System, Absolute and Relative Coordinates,* Polar Coordinate System

2.2 State how to draw of the following draw commands:
line, triangles, rectangle, polygons, circles, arcs, etc.

2.3 Explain Drawing Commands: POINT, DDPTYPE, LINE, XLINE, RAY
2.4 Mention the functions of the following editing commands:
copy, move, array, offset, trim, fillet, chamfer, extend, break,
rotate, stretch, mirror, change, scale and pedit.

2.5 Define Editing Commands: ERASE, OOPS, U, REDO

3. Setting up a drawing

3.1 Explain Drawing Commands: CIRCLE
3.2 Explain the necessity of editing drawing.
3.3 Mention the Editing Commands: COPY, MOVE, ROTATE
3.4 Explain Drawing Aids: LAYER, LTSCALE
3.5 Explain Data related Commands: DIST, LIST, ID
3.6 Mention the Display Commands: OPTIONS (Aperture, Pickbox),
3.7 Explain DSETTINGS, GRAPHSCR
3.8 Mention the Data Management: Object Snaps, Object Properties Toolbar
Use of Function (Toggle) Keys: F1,F2,F3,F6,F7,F8,F9

4. Drawing Basics

4.1 Explain Drawing Commands: ARC, ELLIPSE
4.2 Explain Editing Commands: BREAK, MIRROR, CHPROP, OFFSET

4.3 Explain Drawing Aids: COLOR [144, 160-161], LINETYPE
4.5 Explain Display Controls: BLIPMODE, DRAGMODE, REDRAW
4.6 Explain Drawing Aids: ORTHO, Orthographic Projection, OSNAP
Direct distance entry

5. Organizing Drawing

5.1 Mention the Drawing Commands: BOUNDARY, PLINE
5.2 State Editing Commands: PEDIT, EXPLODE], XPLODE
5.3 Explain Display Commands: REGEN, COPYBASE
5.4 State Drawing Aids: DDGRIPS (Grip size, Grip color)
5.5 State AutoCAD Command: TIME
5.6 Mention AutoCAD commands: LIMITS, UNITS, HELP
5.7 Mention the functions of the following commands:
zoom, pan, undo, redo, save, etc.

5.8 Display Commands: ZOOM, PAN

6. Text & Dimensioning

6.1 State Drawing Commands: RECTANG, POLYGON,DIVIDE, MEASURE
6.2 Explain Editing Commands: TRIM/EXTEND, FILLET, ARRAY
6.3 Mention the Display Commands: VIEW, FILL, ZOOM (Center, Left, Dynamic)
6.4 Explain Data related commands: AREA

7. Creating Elevation & working with Hatch

7.1 Mention the functions of hatch in drawing using AutoCAD.
7.2 Explain Drawing Commands: BHATCH
7.3 Mention the functions of the following dimension commands:
dimension style, linear dimension, aligned dimension, etc.

7.4Explain Dimensioning Commands: Dim/Dim1
7.5 Mention the Editing Commands: HATCHEDIT, SCALE, STRETCH
7.6 Explain Dimension variables: dimasz, dimadec, dimdec, dimtxt, dimunit, dimlunit, dimaunit

8. Working with Text & Layer

8.1 State the insertion of text in drawing using AutoCAD.
8.2 Mention the advantages of layers in drawing using AutoCAD.
8.3 Explain Drawing Commands: TEXT (DTEXT), MTEXT
8.4 State Dimensioning Commands: LEADER/QLEADER
8.5 Editing Commands: CHANGE, DDEDIT, FIND, SPELL
8.6 Explain Dimension variables: dimcen, dimexe, dimexo, dimgap, dimscale, dimlfac, dimrnd

9. Working with Dimensioning & Block

9.1 State Drawing Commands: STYLE, DIMSTYLE (DDIM)
9.2 Explain Editing Commands: SCALETEXT, JUSTIFYTEXT
9.3 Mention the Display Commands: QTEXT
9.4 State Data Management: BLOCK], WBLOCK, INSERT, MINSERT
9.5 State Dimension variables: dimse1, dimse2, dimsd1, dimsd2, dimtih, dimtoh, dimtix
9.6 Mention Special Characters: Degrees (º), Diameter (↓), Plus/Minus (_)

10. Working with dimensioning & Editing

10.1 State Dimensioning Commands: DIMLINEAR, DIMALIGNED, DIMANGULAR, DIMBASELINE,

DIMCONTINUE
10.2 Explain Editing Commands: LENGTHEN
10.3 Mention Data Control Commands: PURGE
10.4 State Dimension variables: dimupt, dimatfit, dimtmove, dimjust, dimzin, dimfrac, dimsoxd

11. Working with Drawing & Editing toolbar

11.1 Explain Drawing Commands: SPLINE, DIMRADIUS, DIMDIAMETER, DIMCENTER, DIMROTATED, QDIM
11.2 Mention the Editing Commands: SPLINEDIT
11.3 State Data Management: UNDO
11.4 State Dimension variables: dimsho, dimdli, dimdle, dimtad, dimaso, dimtsz, dimtofl, dimtvp

12. Working with Layout & Views

12.1 Mention the functions of the following plotting commands:
layout, view port, model space, paper space.
12.2 Explain Drawing Commands: DONUT, SKETCH, RENAME, PLOT
12.3 State Dimension variables: dimalt, dimaltd, dimaltf, dimaltrnd, dimaltu, dimaltz, dimapost, dimazin

Practical :

COMPUTER AIDED DESIGN (CAD)

1 Prepare geometrical drawing using AutoCAD.
1.1 Make a Auto CAD new file
1.2 Set up the units, display formats and precision of measurements.
1.3 Set up the drawing limits.
1.4 Make a grid of dots similar to graph paper.
1.5 Erase a line using commands.
1.6 Un erased and erased line using undo and redo commands.

2 Draw and save drawing using AutoCAD.
2.1 Draw a line using Auto CAD.
2.2 Draw triangles using Auto CAD.
2.3 Draw different types of rectangles using Auto CAD.
2.4 Draw different types of polygons using Auto CAD.
2.5 Draw circles, arcs, etc using Auto CAD.
2.6 Save the existing drawing using AutoCAD**.**

3 Edit the existing drawing using AutoCAD.
3.1 Magnify a portion of the drawing to look closely.
3.2 Trim and extend a portion of a line, area, curve or any object.
3.3 Move and copy a drawing from one place to another.
3.4 Use commands to filled lines, areas and circles.
3.5 Use commands to chamfer lines.
3.6 Perform the uses of the following commands:
array, offset, break, rotate, stretch, mirror, change, scale, pedit and explode.

4 Dimension a drawing using AutoCAD.
4.1 Select a drawing file for dimensioning.
4.2 Use commands to add linear dimensions in the drawing.
4.3 Use commands to add angular dimensions in the drawing.
4.4 Use commands to modify dimension style in the drawing.

5 Layers and hatches the drawing using AutoCAD.
5.1 Create different layers for line, dimension, text, hatches, etc.
5.2 Select different color for different layer.

5.3 Select the type and scale of the hatch for a drawing.
5.4 Select the type and size of the text for a drawing.
5.5 Insert text in the drawing.
5.6 Perform the uses of the following plotting commands: layout, view port, model space, paper space.

6 Use text and plotting using AutoCAD.

6.1 Select the type and size of the text for a drawing.
6.2 Insert text in the drawing.
6.3 Perform the uses of the following plotting commands: layout, view port, model space, paper space.
6.4 Plot the drawing.
6.5 Plot each layer of the drawing separately.

REFERENCE BOOKS

1. AutoCAD - Engr. Md. Shah Alam
2. Mastering AutoCAD - Engr. Samuel Mallik
3. Mastering AutoCAD - George Omura

65931 MATHEMATICS -3

T	P	C
3	3	4

AIMS

- To enable to calculate the areas of regular polygons, hexagons, octagon, hydraulic mean depth (HMD) of a channel, area occupied by water of circular culvert. Excavation work.
- To provide the ability to calculate volume of regular solids like pyramid frustum of pyramid, prismoid, wedge and area of curved surfaces.
- To enable to use the knowledge of gradient of a straight line in finding speed, acceleration etc.
- To enable to use the knowledge of conic in finding the girder of a railway bridge, cable of a suspension bridge and maximum height of an arch.
- To make understand the basic concept and techniques of composition and resolution of vectors and computing the resultant of vectors.

- **SHORT DESCRIPTION**

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.

Co-ordinate Geometry: Co-ordinates of a point, locus and its equation, straight lines, circles and conic.

Vector: Addition and subtraction, dot and cross product.

DETAIL DESCRIPTION

MENSURATION:

1 Apply the concept of area of triangle.

1.1 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.

1.2 Use formula in 1.1 to solve problems.

2 Apply the concept of finding areas of quadrilateral & Parallelogram & finding areas of rhombus & trapezium.

2.1 Define quadrilateral & Parallelogram.
2.2 Find the areas of quadrilateral when off sets are given.
2.3 Find the areas of a parallelogram.
2.4 Solve problems using above formulae.
2.5 Define rhombus & trapezium.
2.6 Find the areas of rhombus when the diagonals are given.
2.7 Find the areas of trapezium in terms of its parallel sides and the perpendicular distance between them.
2.8 Solve problems related to rhombus & trapezium.

3 Apply the concept of finding areas of regular polygon.

3.1 Define a regular polygon.
3.2 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.
3.3 Find the area of a regular.

a) Hexagon

b) Octagon when length of side is given.

3.4 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.

4 Understand areas of circle, sector and segment.

4.1 Define circle, circumference, sector and segment.
4.2 Find the circumference and area of a circle when its radius is given.
4.3 Find the area of sector and segment of a circle.
4.4 Solve problems related to the above formulae.

5 Apply the concept of volume of a rectangular solid.

5.1 Define rectangular solid and a cube.
5.2 Find geometrically the volume of a rectangular solid when its length, breadth and height are given.
5.3 Find the volume and diagonal of a cube when side is given.
5.4 Solve problems with the help of 6.2 & 6.3.

6 Apply the concept of surface area, volume of a prism, parallelepiped and cylinder.

6.1 Define a prism, parallelepiped and a cylinder.
6.2 Explain the formulae for areas of curved surfaces of prism, parallelepiped and cylinder.
6.3 Explain the formulae for volume of prism, parallelepiped and cylinder when base and height are given.
6.4 Solve problems related to 7.2, 7.3.

7 Apply the concept of the surface area, volume of pyramid, cone and sphere.

7.1 Define pyramid, cone and sphere.
7.2 Explain the formula for areas of curved surfaces of pyramid, cone and sphere.
7.3 Explain the formula for volumes of pyramid, cone and sphere.
7.4 Solve problems related to 8.2, 8.3.

CO-ORDINATE GEOMETRY

8 Apply the concept of co-ordinates to find lengths and areas.

8.1 Explain the co-ordinates of a point.
8.2 State different types of co-ordinates of a point.
8.3 Find the distance between two points (x_1, y_1) and (x_2, y_2).
8.4 Find the co-ordinates of a point which divides the straight line joining two points in certain ratio.
8.5 Find the area of a triangle whose vertices are given.
8.6 Solve problems related to co-ordinates of points and distance formula.

9 Apply the concept of locus & the equation of straight lines in calculating various Parameter.

9.1 Define locus of a point.
9.2 Find the locus of a point.
9.3 Solve problems for finding locus of a point under certain conditions.
9.4 Describe the Equation x=a and y=b and slope of a straight line.
9.5 Find the slope of a straight line passing through two point $(x_1, y_1,)$ and (x_2, y_2).
9.6 Find the equation of straight lines:

(i) Point slope form.

(ii) Slope Intercept form.

(iii) Two points form.

(iv) Intercept form.

(v) Perpendicular form.

9.7 Find the point of intersection of two given straight lines.
9.8 Find the angle between two given straight lines.
9.9 Find the condition of parallelism and perpendicularity of two given straight lines.
9.10 Find the distances of a point from a line.

10 Apply the equations of circle, tangent and normal in solving problems.

10.1 Define circle, center and radius.
10.2 Find the equation of a circle in the form:
(i) $x^2 + y^2 = a^2$
(ii) $(x - h)^2 + (y - k)^2 = a^2$
(iii) $x^2 + y^2 + 2gx + 2fy + c = 0$
10.3 Find the equation of a circle described on the line joining (x_1, y_1) and (x_2, y_2).
10.4 Define tangent and normal.
10.5 Find the condition that a straight line may touch a circle.
10.6 Find the equations of tangent and normal to a circle at any point.
10.7 Solve the problems related to equations of circle, tangent and normal.

11 Understand conic or conic sections.

11.1 Define conic, focus, Directorx and Eccentricity.
11.2 Find the equations of parabola, ellipse and hyperbola.
11.3 Solve problems related to parabola, ellipse and hyperbola.

VECTOR :

12 Apply the theorems of vector algebra.

12.1 Define scalar and vector.
12.2 Explain null vector, free vector, like vector, equal vector, collinear vector, unit vector, position vector, addition and subtraction of vectors, linear combination, direction cosines and direction ratios, dependent and independent vectors, scalar fields and vector field.
12.3 Prove the laws of vector algebra.
12.4 Resolve a vector in space along three mutually perpendicular directions
12.5 Solve problems involving addition and subtraction of vectors.

13 Apply the concept of dot product and cross product of vectors.

13.1 Define dot product and cross product of vectors.
13.2 Interpret dot product and cross product of vector geometrically.
13.3 Deduce the condition of parallelism and perpendicularity of two vectors.
13.4 Prove the distributive law of dot product and cross product of vector.
13.5 Explain the scalar triple product and vector triple product.
13.6 Solve problems involving dot product and cross product.

Reference

SL No	Athour	Title	Publication
01	G. V. Kumbhojkar	Companian to basic Maths	Phadke Prakashan
02	Murary R Spigel	Vector & Tensor Analysis	Schaum's Outline Series
03	Md. Abu Yousuf	Vector & Tensor Analysis	Mamun Brothers
04	Rahman & Bhattacharjee	Co-ordinate Geometry & Vector Analysis	H.L. Bhattacharjee
05	Md. Nurul Islam	Higher Mathematics	Akkhar Patra Prakashani

65722 **COMMUNICATIVE ENGLISH** **T P C**
1 3 2

Full Marks: 100 (Practical-50.Theoretical-50)

Introduction

This Course Will Provide A Unique Foundation In The Basic Level For Developing Listening, Speaking, Reading And Writing Skills Into Some Of More Specialized And Advanced Capabilities Of Basic Operation In Communication.

Theory Part

Total Mark: : 50
Continuous Assessment : 20
Final Exam : 30

Objectives:

After The Completion of the Module, Learners Will Be Able To Develop-

Creative Writing Ability
Transferring Information, Ideas And Knowledge
#Communicative Competence Effectively In The Workplace Situation.

1.Comprehension For Reading Task (Mark:10)

(Text May Be Taken From Contemporary Journals, Editorial of News Papers Or From Online Resources)

Test Items:

1. MCQ (Guessing Meaning from Context)
2. Rearranging
3. Gap-Filling (With Clues or Without Clues)
4. Answering Questions
5. Summarizing

2. Composition (Mark: 20)

The Following Are The Topic Title Introduced For Writing Task:

1. Introduce Formal/Informal Greeting &Farewell
2. Describe The Idea Of Communication & Presentation Skills
3. Write Paragraph On The Basis Of Comparison and Contrast
4. Narrate Process, Stories And Interpreted Charts, Graphs.
5. Write Letters to the Print and Electronic Media
6. Write Letters of Advice, Complaints, Inquiry, Order and Cancellation
6. Prepare Seven Days Weather Report.
7. Make An Attractive Poster For The People Giving Advice To Protect The Environment.
8. Prepare A Series Of Questions About Personal Information, Place Of Interest, Foods, Hobby And Employment Opportunity.

9. Write Dialogue On The Following Situations
   # About Exchanging Views With A Person And Introducing One Narrating Daily Activities
   # Meeting At The Train Station & Asking Question About The Departure And Arrival Of The Train To The Station Manager
   # Meeting at The Airport And Asking The Flight Schedule
   # Getting To The Hotel And Asking For A Reservation
   # Social Language for Telephonic Conversation
   # Talking About the Weather, Trips & Sight Seeing
   # Asking Permission and Making Request.

Talking About Office and Office Manner
Talking About Etiquette and Manner

10. Prepare Job Application With A Complete CV For Job Suitable For You.

Practical Part:

Objectives:

1.Communicate The Areas That Learners Encounter In Real Life Situation.

2.Reinforce The Basic Language Skills Of Listening And Speaking.

3.Integrate ICT As Tools In Learning Language.

Course Content

Unit	Lesson	Title
1. Use Of Dictionary	Define Dictionary	1.1 Know How To Use A Dictionary 1.2 Learn At Least 10 Words In A Day With Correct Pronunciation (Follow The Link : Www.Marriunm-Englishdictionary.Com)
2. Basic Vocabulary Practice	Basic Words For Communication By ODGENS	2.1 Use 10 Most Common Formulas (Structure) To Write Correct Sentence. (Follow The Link: Www.Odgensbasicvocabulary.Com Www.Grammarly.Com)
3.Listening Skill Practice	Listen To The Audio Video Presentation On Current Real Life Situation	3.1 Practice Audio Video Conferencing Activities. 3.2. Communicate With The English Speaking People Online (Link: Www.Speaking24.Com)
4. Speaking Skill Practice (Self Interpretation)	Introduce Yourself With The Vocabulary Prescribed By ODGENS	4.1 Browse Vocabulary Related Phrases To Introduce You. (Link : Www.Youtube.Com/ Let Me Introduce Myself)
5. Listening Skill Practice	Listen To The Weather Reports, Sports Commentary In The English TV Channels.	5.1 Prepare Seven Days Weather Report For The Place You Are Staying. 5.2. Make Some Attractive Poster To Protect The Environment.
6. Speaking Skill Practice	Identify Formal And Informal Social Language	6. 1 Practice Conversation Emphasizing On Greetings & Farewell (Link-Www.Esl.Guide@About.Com) 6.2 Take Part In Audio Video Conferencing Activities 6.3 Ask Questions About Personal Information, Place Of Interest, Food, Hobby, Employment Opportunity With Foreign Friends Using Social Media.
7. Writing Skill Practice	Develop Paragraph	7.1 Develop Paragraph On The Basis Of Comparison, Contrast And Analysis. Check Plagiarism Wordiness By The Correction Software (Www.Grammarly.Com) 7.2. Write E-Mail, Send And Reply E-Mail

8. Listening Skill Practice	Watch Short Films, Documentary And	8.1 Listen To Hard Talk, Interview 8.2. Prepare A Series Of Questions To Interview A

	Listen To The English Music(With Lyric) To Practice In A Group	Celebrity 8.3. Down Load Documentary From Www.Youtube.Com/Education
9.Presentation	Define Presentation	9.1 Edutain/Entertain Yourself Preparing A Documentary In A Group With The Activities Done During The Period Of Class Hours In The Lab For Communicative English.

Evaluation:
Students Can Be Evaluated Individually Or In A Group On The Basis Of Performance Done In The Lab. Furthermore, They May Be Given Online Test Using Authenticated Websites Like Www.Britishcoucil.Org/Education/Blog/Podcast/News/Weather,Www.Englishteststore.Com.Www.Ieltsexam.Com

Lab-Facilitator, 30 Students In A Group:

Physical Facility	Size (In Ft)	Area (In Sq Ft)
Class Room Cum Laboratory	1 5 × 20	300
Library	15 × 20	300
Wash Room	4 × 7	28

Lists Of Equipments And Resources For 30 Learners:

Personal Computers With Accessories	15
Projector Multimedia	01
Printer	01
Scanner	01
Modem	01
Essential Software	01 Set
Internet Connection For Each Computer	Broad Band/Dial Up
Camera (Digital)	01
Video Conferencing Equipments	01 Set
TV Card	01
Satellite Cable Connection	01
Head Phone	15
Related Books And Journals	01
First Aid Box	01

Reference:
Www.Britishcouncil.Org,Www.Marium-Websters.Com,Www.Compellingconversation.Com, Www.Esl.Guide@About.Com, Www.Bbc.Com/News, Www.Speaking24.Com, Www.Itutor.Com, Www.Ieltsexam.Com, Www.Englishteststore.Com, Www.Ginger.Com, Www.Grammarly.Com

(Note: This Course May Be Introduced After Fourth Semester Coz It Needs Some Maturity Of The Students To Adopt With The Course Materials And The Contents. These Themes Are Suggestive Not Prescriptive.)

65913 CHEMISTRY **T P C**
3 3 4

Objectives:

1. **To Understand Mole Concept And Volumetric Analysis.**
2. **To Represent The Formation Of Bonds In Molecules.**
3. **Able To Select Appropriate Materials Used In Construction.**
4. **Apply Knowledge To Enhance Operative Life Span Of Engineering Material And Structure By Various Protective Methods.**

Short Description: Chemistry Is A Basic Science Subject Which Is Essential To All Engineering Courses. It Gives Knowledge Of Engineering Material, Their Properties Related Application And Selection Of Material For Engineering Application. It Is Intended To Teach Student The Quality Of Water And Its Treatment As Per The Requirement And Selection Of Various Construction Materials And Their Protection By Metallic And Organic Coatings. The Topics Covered Will Provide Sufficient Fundamental As Well As Background Knowledge For The Particular Branch.

Section - 01 (Physical and Inorganic Chemistry)

1. Atomic Structure and Chemical Bond

1.1 Definition of Element, Atoms, Molecules, Fundamental Particle of Atom, Their Mass, Charge, Location.
1.2 Definition of Atomic Number, Mass Number, Isotope, Isotone and Isobar.
1.3 Electronic Configuration Based on Hunds Rule, Aufbau's Principle, Paulis Exclusion Principle
1.4 Definition Of Atomic Weight, Equivalent Weight of An Element, Molecular Weight, Mole In Terms of Number, Mass, Volume.
1.5 Define Symbol, Valency And Formula.
1.6 Explain Chemical Bond, Octet Rule.
1.7 Explain Formation of Various Types of Chemical Bonds: Covalent, Ionic, Co-Ordinate Bond.
1.8 Explain The Bonding Along With Example CH_4 , H_2, O_2, Nacl, $Mgcl_2$.
1.9 Explain Quantum Number, Orbit And Orbital.

2. Ionic Equilibrium

2.1 Concept of Acid, Base, Salt and Types Of Salts.
2.2 Ph, Poh, Ph Scale.
2.3 Basicity of An Acid and Acidity of A Base.
2.4 Normality, Molarity, Molality, Volumetric Analysis.
2.5 Titration and Indicator.
2.6 Buffer Solution and Its Mechanism.

3. Chemical Reaction, Oxidation and Reduction.

3.1 Define Chemical Reaction And Explain The Various Type Of Chemical Reaction.
3.2 Explain The Full Meaning Of A Chemical Equation.
3.3 Concept of Catalyst.
3.4 Modern Concept of Oxidation and Reduction.
3.5 Simultaneous Process of Oxidation and Reduction.
3.6 Explain The Oxidation Number.

4. Water Treatment

4.1 Concept of Hard And Soft Water
4.2 Hardness of Water
4.3 Describe The Softening Method Of Permuted Process And Ion Exchange Resin Process.
4.4 Advantage and Disadvantage of Hard Water in Different Industries.
4.5 Water Treatment Plant Visit and Reporting.

5. Corrosion And Alloy

5.1 Types of Corrosion. (Dry and Wet Corrosion)
5.2 Atmospheric Corrosion, Types Of Atmospheric Corrosion And Their Mechanism, Oxide Films Factors Affecting Atmospheric Corrosion.
5.3 Electrochemical Corrosion, Mechanism of Electrochemical Corrosion.Types of Electrochemical Corrosion. Factors Affecting Electrochemical Corrosion.
5.4. Protective Measures Against Corrosion: Coating (Galvanic and Zinc, Organic Coating Coating Agents, Electroplating, Metal Cladding)
5.5 Concept of Alloy.

Section -2 (Organic Chemistry)

6. Organic Chemistry and Introduction to Polymers:

6.1 Types of Chemistry.
6.2 Catenation Property of Carbon.
6.3 Organic Compounds, Its Properties and Applications.
6.4 Classification of Organic Compound By Structure and Functional Group: Definne: Homologous Series, Alkanes, Alkenes and Alkynes; Properties And Uses of General Formula ; Names and Structure of First Five Members Hydrocarbons .
6.5 Polymer, Monomer, Classification of Polymers, Polymerization, Addition and Condensation Polymerization.
6.6 Plastics: Definition, Its Types and Uses.

Section -3 (Industrial Chemistry)

7. Glass and Ceramic:

7.1 Concept of Glass and Its Constituents, Classification and Uses of Different Glass, Elementary Idea of Manufacturing Process of Glass.
7.2 Introduction to Ceramic Materials, Its Constituent.
7.3 Industrial Application of Glass and Ceramic.
7.4 Industry Visit and Reporting.

8. Soap and Detergent:

8.1 Introduction - A. Lipid B. Fats and Oils
8.2 Saponification of Fats and Oils, Manufacturing Of Soap.
8.3 Synthetic Detergent, Types of Detergents and Its Manufacturing.
8.4 Exclusives: TNT, RDX, Dynamite.
8.5 Paint and Varnish
8.6 Adhesives.

9. Cement, Pulp And Papers:

9.1 Concept of Cement and Its Constituents, Classification and Uses of Different Cement, Manufacturing Process 0f Cement.
9.2 Manufacturing Process of Pulp and Papers.
9.3 Industry Visit and Reporting.

Section - 4 (Practical Chemistry)

1. Use Of Laboratory Tools And Safety Measures

2. Observation And Measurement :

2.1 Determine the Strength of Hcl Solution Using 0.1N Na_2CO_3

2.2 Determine The Strength of Naoh By Using 0.1N Hcl Solution.

3. Qualitative Analysis Of Known And Unknown Salts :

3.1 Identification of Known Salt (Sample Copper, Iron, Aluminum, Led, Ammonium and Zinc Salt.)

3.2 Identification of Unknown Basic Radical (E.G. Led, Copper, Iron, Zinc, Aluminum, Ammonium)

3.3 Identification of Unknown Acid Radicals (E.G. Chloride, Nitrate, Sulphate, Carbonate)

Source or Reference Book

1. Higher Secondary Chemistry (Paper 1st And 2nd)- Writer Dr.Gazi Md.Ahsanul Karim. And Md.Robiul Islam
2. Higher Secondary Chemistry (Paper 1st And 2nd)- Writer Dr.Soroz Kanti Singha Hazari .
3. An Introduction To Metallic Corrosion And Its Prevention- Writer Raj Narayan.
4. Organic Chemistry- Writer Morrisson And Boyad.
5. Inorganic Chemistry - Writer Ali Haider

66822 Electronics Engineering Fundamental

T	P	C
2	3	3

OBJECTIVES

- To provide understanding soldering technique and color code.
- To provide understanding and skill on the basic concept of semiconductor and to identify physically a range of semiconductor diodes.
- To develop comprehensive knowledge and skill on special diodes and devices.
- To develop the abilities to construct different rectifier circuits.
- To provide understanding of the basic concept and principle of transistor and toidentify physically a range of transistor.
- To provide understanding and skill on oscillator.
- To provide the understanding skills on Multivibrator.

SHORT DESCRIPTION

Color code and soldering; Semiconductor; P-N junction diode; Special diodes and devices; Power supply; Transistor; Transistor amplifier; Oscillator, Multivibrator.

DETAIL DESCRIPTION

Theory:

1 Soldering and Color Code.

1.1 Define soldering.
1.2 List the materials needed in soldering.
1.3 Mention the properties of a good soldered joint.
1.4 Multi layered Printed circuit board.
1.5 Mention the function of resistor, capacitor and inductor in electronic circuits.
1.6 Describe the procedure of determining the value of Capacitor, & Resistor using numeric and color code.

2 Semiconductor

2.1 Define Conductor, Semiconductor and Insulator.
2.2 Describe Semiconductor with atomic structure.
2.3 Explain the energy band diagram of Conductor, Semiconductor and Insulator.
2.4 Classify Semiconductor.
2.5 Describe the formation of P-type & N-Type Semiconductor material.
2.6 Explain the majority & minority charge carrier of P-type & N-Type Semiconductor.

3 P-N Junction Diode

3.1 Define PN junction diode
3.2 Describe the formation of depletion layer in PN junction.
3.3 Mention the behavior of PN junction under forward and reverse bias.
3.4 Explain the forward & reverse current voltage (IV) characteristics of PN junction diode.
3.5 Describe the operation of Zener diode.
3.6 Describe the application of Zener diode in voltage stabilization.
3.7 Describe the construction operation and application of (i) varactor diode (ii) LED (iii) LCD (viii) photo diode (ix) Solar cell.
3.8 Describe the construction operation and application of (i) DIAC (ii) TRIAC and (iii) SCR.

4 DC power supplies.

4.1 Define (i) dc power supply (ii) Regulated and Unregulated Power Supply.
4.2 Describe the block diagram of a typical regulated dc power supply.
4.3 Explain the operation of Half wave, Full wave and Bridge rectifier.
4.4 Mention ripple factor of Half wave, Full wave and Bridge rectifier.
4.5 Explain the operation of different types filter circuits with wave shape.

5 Bipolar Junction Transistor (BJT)

5.1 Define Transistor.
5.2 Describe the construction PNP and NPN Transistor.
5.3 State the biasing rules of BJT.
5.4 Explain the mechanism of current flow of PNP and NPN Transistor.
5.5 Draw the three basic transistor configuration circuits (CB, CC, CE).
5.6 Describe the characteristics of transistor in CB, CE, CC configuration.
5.7 Describe current amplification factor α , β and γ.
5.8 Establish the relation among α , β and γ.
5.9 Solve problem related to I_E, I_C, I_B,α , β and γ.

6 Transistor biasing and load line.

6.1 Mention the needs for biasing of transistor
6.2 State the conditions for proper biasing of transistor.
6.3 Describe the methods of drawing load line of transistor.
6.4 Explain the Effect of the location of operating point on the output signal.
6.5 Describe the various methods of transistor biasing.

7 Transistor Amplifier

7.1 Define (i) Amplifier (ii) Amplification and (III) Gain
7.2 Mention the classification of Amplifier.
7.3 Describe the principle of operation of a single stage common emitter (CE) Amplifier.
7.4 Draw DC & AC equivalent circuits of the CE amplifier circuit.
7.5 Explain the operation of RC coupledandtransformer coupled multistage amplifier.
7.6 Describe the operation of Push-Pull amplifier.

8 **Field-Effect Transistor(FET).**

8.1 Define field effect transistor(FET).
8.2 Mention the types of FET
8.3 Describe the construction and operation Junction Field Effect Transistor (JFET).
8.4 Explain characteristics of JFET .
8.5 Describe the parameters of JFET.
8.6 Establish the relationship among FET parameters.
8.7 Describe the DC biasing of JFET and its load line.
8.8 Describe the Construction and operation of DE and E-Only MOSFET.

9. **Sinusoidal Oscillators.**

9.1 Define feedback
9.2 Describe different types of feedback with block diagram.
9.3 Calculate the gain of amplifier with feedback (positive and negative).
9.4 Mention the advantages and disadvantages of negative feedback.
9.5 Explain the principle of operation of a oscillatory tank circuit.
9.6 Describe the essentials of feedback LC oscillators.
9.7 Explain the principle of operation of Hartly, Colpitt andWein-bridge oscillators.
9.8 Explain the principle of operation phase shift & crystal oscillators.

10. **Multivibrator circuits.**

10.1 Define time base circuit.
10.2 Mention the methods of generating time base waveform.
10.3 Explain the generation of saw-tooth wave using charging and discharging of a capacitor.
10.4 Understand the features of multivibrator circuits.
10.5 State what is meant by multivibrator.

10.6 Explain the operation of astable, monostable and bistable mutivibrator circuits with wave shapes.
10.7 Mention the principle of operation of Schmitt trigger circuit.

Practical : (Using Real component and Simulation Software)

1 Show skill in identifying the electronic components.

1.1 Observe the electronic components board and read the manuals.
1.2 Identify the different types of resistors with their values, tolerance and wattage.
1.3 Identify the different types of potentiometers with their values, & wattage.
1.4 Identify the different types of capacitors with their values, dc working voltages and types.
1.5 Identify the different types of diodes & rectifiers with the numbers and specifications.
1.6 Identify the different types of transistors and thyristors with their number and specifications.
1.7 Identify the different types of LED's, IC's and miniature relays with their number & specification.
1.8 Identify different types of transformer with their specification.
1.9 Identify different inductors with their values & current ratings.
1.10 Study the printed circuit boards.
1.11 Sketch the symbols of components used in electronic circuits.
1.12 Describe the basic function of each component.
1.13 Write a report on above activities.

2 Show skill for determining the values of different resistors and capacitors with the help of color code.

2.1 Select color code resistors & capacitors of different values.
2.2 Identify the colors and their numerical numbers.
2.3 Determine the value of resistors with tolerance.
2.4 Determine the value of capacitors and dc working voltage.
2.5 Write a report on above activities.

3 Show skill in performing soldering.

3.1 Select wires (single strand and multi strand) and cut wires to required length.
3.2 Select soldering iron, soldering tag and soldering lead.
3.3 Remove wire insulation to required length.
3.4 Clean and tin both iron and work piece.
3.5 Use a tinned iron in order to transfer adequate heat to the joint.
3.6 Joint two singles& multi stranded wires mechanically and solder.

4 Show skill in soldering & de-soldering of electronic components and wires to the other components and circuit boards.

4.1 Select electronic components, wires and PCB.
4.2 Determine the rating of the soldering iron suitable for the work piece.
4.3 Clean and tin both iron & work piece.
4.4 Feed new soldering materials to the tinned and heated joint, in order to produce a correctly soldering.
4.5 Check the quality of soldering.
4.6 Clean and tin iron and de-solder the joint and components.
4.7 Use solder suckers and solder braid for de-soldering.
4.8 Write a report on the Job.

5 Show skill in checking the semi-conductor diode.

5.1 Collect a range of semi-conductor diodes and manufactures literature.
5.2 Select the digital multi-meter and set the selector switch to ohm range.

5.3 Determine the specification of semi-conductor diode.
5.4 Compare the determined specification with that of manufactures literature.
5.5 Measure forward & reverse resistances of the diode.
5.6 Identify p and p side of the diode.
5.7 Determine the condition of the diode.

6 Show skill in sketching forward and reverse characteristics curves of a semiconductor diode.

6.1 Select meter, power supply, components and materials.
6.2 Complete circuit according to circuit diagram for forward bias.
6.3 Check all connections.
6.4 Measure forward bias and corresponding forward current.
6.5 Record results in tabular form.
6.6 Connect circuit according to circuit diagram of reverse bias.
6.7 Measure reverse bias and corresponding reverse current.
6.8 Record results in tabular form.
6.9 Sketch the curves form data.

7 Show skill in sketching waves of half wave rectifier circuit.

7.1 Select meter, component, oscilloscope and materials.
7.2 Complete circuit of a half wave rectifier according to circuit diagram.
7.3 Check the circuit before operation.
7.4 Measure the input and output voltage and observe wave shapes in the oscilloscope.
7.5 Sketch the output voltage wave shape.

8 Show skill in sketching waves of full wave center tapped rectifier circuit.

8.1 Select meter, component, oscilloscope and materials.
8.2 Complete a full wave rectifier circuit according to circuit diagram.
8.3 Check the circuit supply & polarity of supply.
8.4 Measure the input & output voltages and observe wave shapes in the oscilloscope.
8.5 Sketch the output voltage wave shape.
8.6 Compare the result with half-wave rectifier circuit.

9 Show skill in constructing full wave bridge rectifier.

9.1 Select meter, component, oscilloscope and materials.
9.2 Build the circuit according to the circuit diagram.
9.3 Check the circuit.
9.4 Measure the input and output voltage.
9.5 Observe wave shape.
9.6 Compare the result with other rectifiers.

10 Show skill in identifying the terminals of bipolar junction transistor.

10.1 Select pnp & npn bipolar junction transistors.
10.2 Take AVO meter and manufacture's literature of transistor.
10.3 Identify transistor legs.
10.4 Measure base-emitter, base-collector, forward and reverse resistance.
10.5 Determine the specifications with help of manufacturer's literatures.
10.6 Identify pnp & npn transistor.

11 Show skill in determining input and output characteristics of a transistor in common emitter connection.

11.1 Select component, AVO meters, circuit board and required materials.
11.2 Construct the circuit.
11.3 Adjust the biasing voltage to appropriate point.
11.4 Record input and output voltage and current.
11.5 Plot the curve with recorded data.

12 Show skill in measuring operating points (VCE and IC) for Transistor circuit.

12.1 Select a fixed bias transistor circuit materials.
12.2 Select required equipment.
12.3 Prepare the circuit.
12.4 Check the connections
12.5 Adjust the circuit**.**

13. Demonstrate the operation of a Hartly, Colpitt and R-C oscillator.

13.1 Draw the circuit diagram.
13.2 Select tools, equipment and materials.
13.3 Connect the circuit diagram.
13.4 Check and energize the circuit.
13.5 Observe the output for different frequencies

14. Study the operation of a transistor astable, monostable& bi-stable multivibrator circuit. Select an experiment circuit.

14.1 Select the required tools and materials.
14.1 Build up the circuit as per diagram.
14.1 Switch on the power supply.
14.1 Switch on the trigger signal.
14.1 Observe the wave shapes at each collector & base of the transistor

REFERENCE BOOKS :

1. A Text Book of Applied Electronics - R.S. SEDHA
2. Principles of Electronics - V. K. Mehta

65812 PHYSICAL EDUCATION AND LIFE SKILL DEVELOPMENT T P C
0 3 1

OBJECTIVES

- To enhance body fitness.
- To make aware of First Aid Procedure.
- To acquaint with the Common games and sports.
- To develop Life Skill.

SHORT DESCRIPTION

Warm up; Yoga; Muscle developing with equipment; Meditation, First aid; sports science, Games & sports; Life skill development.

DETAIL DESCRIPTION

1. National Anthem and Assembly

1.1 Line and File.
1.2 Make assembly.
1.3 Recitation of national anthem.
1.4 National anthem in music.

2. Warm up

2.1 **General Warm-up :**
Spot running (Slow, Medium & Fast), Neck rotation, Hand rotation, Side twisting, Toe touching, Hip rotation, Ankle twisting, Sit up and Upper body bending (Front & Back).

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 warm up :**
Legs raising one by one, Leg raising in slanting position, Knee bending and nose touching, Heels raising, Toes touching (standing and laying position), Hand stretch breathing (Tadasana, Horizontal, Vertical).

2.4 Mass Physical Exercise
Hand raising, Side twisting, Front & back bending, Front curl, Straight arm curl two hand, Hands raising overhead and Push up.

3. Yoga

3.1 Dhyanasan : Shabasan, Padmasan, Gomukhasan, Sharbangasan, shashangasan Shirshasan
3.2 Shasthyasan : Halasan, Matshasan, Paban Muktasan, Ustrasan.
3.3 Prana and Pranayama: Nadisuddhi Pranayma, cooling pranayamas (sitali pranayama, Sitkari Pramayama, sadanta pranayama), Ujjayi pranayama,

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.
4.4 Horizontal bar : Chinning the bar with front grip, Chinning the bar with wide back grip.
4.5 Jogging Machine : Slow, Medium, and Fast running.
4.6 A. B king pro (Rowing Machine): Sit up.
4.7 Sit up bench: Sit up.

5 **Meditation**

5.1 Define meditation.
5.2 Classification of Meditation.
5.3 Nadanusandhana (A-Kara chanting, U-Kara chanting, M-Kara chanting, AUM-kara chanting.
5.4 OM-Meditation.
5.5 Cyclic Meditation (Starting Prayer, Instant Relaxation Technique, Centring, Standing Asanas, Sitting Asanas, Quick Relaxation Technique).

6. **First Aid**

6.1 Define First Aid.
6.2 What do you mean by First Aider.
6.3 Discuss the responsibilities of a First Aider.
6.4 Different types of equipment of First Aid.
6.5 Muscle Cramp-Ice application (Remedy).
6.7 Dislocation-Ice application (Remedy).

7. Rules and Technique of games and sports

7.1 Kabadi.
7.2 Football.
7.3 Cricket.
7.4 Badminton.
7.5 Athletics.
7.6 Swimming.

8. Sports Science

8.1 Definition of Exercise physiology.
8.2 Function of muscles.
8.3 Concept of work, energy and power.
8.4 Effect of exercise on heart and circulatory system.
8.5 Motor components for physical fitness.
8.6 Definition of sports Biomechanics.
8.7 Definition of sports psychology.
8.8 Meaning of nutrition, Diet and Balanced diet.
8.9 Meaning of the terms –Test, measurement and Evaluation.

9. Show skill on conversation on day to day life

9.1 Today's Market price.
9.2 Festivals(religious festivals, National festivals).
9.3 Celebration of National days.
9.4 Aim in life.
9.5 Visited historical places/sites.

10. Human relation

10.1 Family relation.
10.2 Relation with nighbour.
10.3 Humanitarian Service.
10.4 Service for handicapped (intelligent, physical, social etc).
10.5 Service for orphan / Patient.

11 Vote of appreciation

11.1 About dress .
11.2 For good work.
11.3 For good result.
11.4 For good news.

12. Stress Management

12.1 Habit to be a man of humor.
12.2 Always brain should be cool.
12.3 Positive thinking.
12.4 Factors that determine our attitude.
12.5 The benefits of a positive attitude.
12.6 Steps to building a positive attitude.

13 Time Management

13.1 Determine essential time for a task.
13.2 Determine delay and unexpected time.
13.3 Determine time for daily activities .
13.4 Plan for daily activities.

14 Interview Technique

14.1 Mental preparation to face an interview.
14.2 Selection of dress for interview.
14.3 Introducing himself/herself to the interviewer .
14.4 Coping interview.

15 Team work

15.1 Organized a team.
15.2 Selection of team leader.
15.3 Distribution the task to the members.
15.4 Accepting opinion of team members.
15.5 Completion of task as a team.

16 Social work

16.1 Tree plantation.
16.2 Community service.
16.2.1 Rover Scout.
16.2.2 Sanitation.
16.2.3 Pure drinking water.
16.2.4 Social Culture.

Reference Book

Modern Yoga _Kany Lal Shah
Rules of games and sports_ Kazi Abdul Alim
Yoga _ Sobita Mallick
Iron Man_ Nilmoni Dass