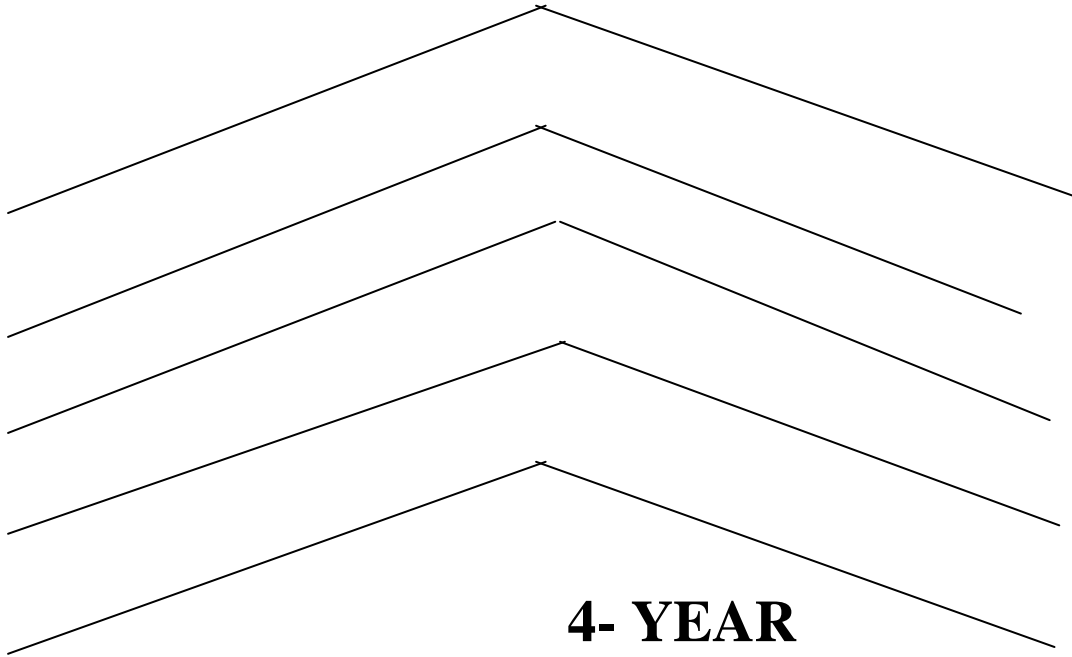# BANGLADESH TECHNICAL EDUCATION BOARD

4- YEAR

DIPLOMA-IN-TEXTILE ENGINEERING PROGRAM

SYLLABUS

3RD SEMESTER

BANGLADESH TECHNICAL EDUCATION BOARD

4-YEAR

DIPLOMA IN TEXTILE ENGINEERING PROGRAM

SYLLABUS

THIRD SEMESTER

Textile Diploma

THIRD SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				
						Theory		Practical		
						Cont. assess.	Final exam.	Cont. assess.	Final exam.	Total
1	1931	Yarn Manufacturing-I	3	3	4	30	120	25	25	200
2	1932	Fabric Manufacturing-I	3	3	4	30	120	25	25	200
3	6621	Computer Application-I	0	6	2	-	-	50	50	100
4	5931	Mathematics-III	3	3	4	30	120	50	-	200
5	5922	Physics-II	3	3	4	30	120	25	25	200
6	5821	Social Science-II	2	0	2	20	80	-	-	100
7	5722	English-II	2	2	3	20	80	50	-	150
		TOTAL	**16**	**20**	**23**	**160**	**640**	**225**	**125**	**1150**

1931   **YARN MANUFACTURING-I**

T P C
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Aims

To provide the students with an opportunity to acquire knowledge, skill & attitude in the area of yarn manufacturing with special emphasis on:

● Blow room
● Cotton carding

Short descriptio

Understand the basic aspects of spinning; ginning process & mixing/blending; bale management system; blow-room; bale opening machinery; bale opening & cleaning machinery; mixing/blending machinery; card feeding/lap forming machine; de-dusting, dust removal & dust collection system; accessories & associated equipment for blow room; faults & calculation in blow room; basic aspects of basic carding, card-setting, carding & stripping, card-clothing; card-stripping, grinding of the card, card waste; maintenance & relevant calculations of carding.

Detailed description

Theory:

Spinning

1.0   Understand basic aspects of spinning.
  1.1   List the Name the different spinning system for short staple.
  1.2   Discuss about different quality of cotton for different count of yarn.

2.0   Understand the basic aspects of ginning process & mixing/blending process.
  2.1   Define ginning & types of ginning.
  2.2   Describe the working principle of different ginning systems.
  2.3   Mention the faults of ginning & their remedies.
  2.4   Discuss different types of mixing.
  2.5   Discuss the difference between mixing & blending.

3.0   Understand the basic aspects of blow-room.
  3.1   Mention the objects of blow-room.
  3.2   State the typical sequences of blow-room machinery.
  3.3   Describe the basic operations involved in the blow-room.
  3.4   Describe different blow-room lines for different grade of cotton, both conventional & modern.
  3.5   Discuss the different type of blow-room waste.

4.0 Understand bale opening machinery.

    4.1   List the names of different opening machines.

    4.2   Mention the objects of different opening machines.

    4.3   Discuss the working principles of different opening machines, conventional and modern (viz. Blender, opener, plucker, etc).

5.0 Understand bale opening and cleaning machinery.

    5.1   Mention the objects of different opening & cleaning machines.

    5.2   Discuss the working principles of Step cleaner, porcupine beater mono cylinder cleaner, saw toothed beater, erm cleaner etc.).

    5.3   Discuss about grid-bar.

6.0 Understand mixing/blending machinery.

    6.1   Mention the objects of mixing/blending machines.

    6.2   List the different types of mixing/blending machine (conventional & modern).

7.0 Understand the machines used for card feeding/lap forming.

    7.1   Mention the objects of lap forming machine.

    7.2   Describe the working principles of lap forming machine with feeding types.

    7.3   Discuss about lap length motion, knock-off mechanism of lap forming machine.

    7.4   Explain piano-feed motion.

    7.5   Discuss chute feed system.

10. Understand accessories & associated equipment for blow-room.

    8.1 Discuss by-pass system used in blow-room.

    8.2 Discuss metal extractor used in blow-room.

    8.3 Discuss waste disposal unit used in blow-room.

9.0 understand the faults & calculation in blow-room

    9.1   Mention the change points in blow-room.

    9.2   Mention the faults in blow-room.

    9.3 Calculate efficiency, cleaning efficiency, lap-length, beater speed, production, etc, of blow-room.

10.0 Understand the basic of carding.

    10.1 Mention the objects of carding.

    10.2 Mention the types of carding machines.

    10.3 Mention the feeding system in carding

    10.4 Describe the working principle of lap feed revolving flat card.

    10.5 Discuss the faults, causes & remedies of carding.

11.0 Understand card setting.

      11.1 Define card setting.

      11.2 Mention the setting points of carding machine with their gauze length & range.

12.0 Understand carding & stripping.

      12.1 Define carding & stripping.

      12.2 Describe carding & stripping action.

13.0 Understand card clothing.

      13.1 State the term card clothing.

      13.2 Mention the types of card clothing.

      13.3 Distinguish between flexible wire & metallic wire clothing.

14.0 Understand Card Stripping.

      14.1 State the necessity of stripping.

      14.2 Mention the types of stripping.

      14.3 Describe the procedure of stripping.

15.0 Understand the Grinding of Card.

      15.1 State the necessity of grinding.

      15.2 Describe the methods of grinding system.

      15.3 Distinguish between horse-roll & long roll grinding.

16.0 Understand Card Waste.

      16.1 State card waste.

      16.2 Mention the different types of card wastes.

      16.3 State the uses of card waste.

17.0 Understand Maintenance & relevant Calculations of Carding.

      17.1 Discuss different change points in carding and their effects on changing.

      17.2 Calculation of carding draft.

      17.3 Solve the problems relating draft, speed and production, silver count of carding machine.

Practical

1.0   Study and draw different feed apparatus used in blow-room indicating the names of different parts and their specific functions.

2.0   Study and draw different opening devices used in blow- room indicating the names of different parts and their specific functions.

3.0   Study and draw different rotating devices (ie. Beaters) used in blow-room indicating the names of different parts and their specific functions.

4.0 Study and draw the following opening machines indicating their different working parts, specific objects & working principle :
   I) Bale blender
   II) Bale opener
   III) Bale plucker

5.0 Study and draw the following opening and cleaning machines indicating their different working parts, specific objects & working principle :
   I) Step cleaner
   II) Mono cylinder.
   III) Erm cleaner.

6.0 Study and draw the following mixing & blending machines indicating their different working parts, specific objects & working principle:-
   I) Multiple mixer.

7.0 Study and draw the lap forming machine (i.e scutcher machine) indicating different working parts.

8.0 Study & draw the piano feed regulating motion in scutcher indicating working parts, objects & working principle.

9.0 Study and draw the cotton carding machine.
   A) Card setting.
   B) Card stripping.
   C) Draft calculation
   D) Efficiency and production calculation.

Reference books

1.0 A practical guide to opening and carding- w. Klein.

2.0 Manual of cotton spinning vol. I part i & part ii- textile institute.

3.0 Textile fibre to fabric –bernard p. Corbman

4.0 Cotton spinning-w.s taggert.

5.0 Cotton spinning hand book - r. Jagannathan.

6.0 Textile mill technical data – r. Jagannathan.

7.0 ইয়ার্ন ম্যানুফ্যাকচারিং-১ মোঃ মহিবুল ইসলাম.

৪.0 আঁশ থেকে সুতা -আলী আহমেদ চৌধুরী.

1932   FABRIC MANUFACTURING-I

T P C
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Aims

- To develop the basic knowledge regarding preparatory process of fabric manufacture.
- To develop the skill of the students, in weaving preparatory process.
- To familiarize the students, with different types of loom.
- To provide skill on basic concept of knitting.

Short Description

Basic concept of fabric weaving processes like winding; Warping; Sizing; Denting & drafting; Read & heald count; Weaving; Power loom; Loom motion & basic idea of knitting.

Detailed Description

Theory

1.0 Understand fabric
    1.1   Classify the fabrics.
    1.2   Mention the flow-chart of fabric manufacturing process.

2.0 Understand winding
    2.1   Define winding.
    2.2   Describe the objects of winding.
    2.3   Classify the winding.
    2.4   Describe the different types of packages.
    2.5   Describe different types of traversing motion.
    2.6   Describe different types of yarn tensioning devices.
    2.7   Importance of tension in winding.
    2.8   Discuss the faults in winding.

3.0 Understand winding machine.
    3.1   Describe the features of modern winding machine.
    3.2   Describe working principle of cone & pirn winding machine.
    3.3   Solve problems related to winding.

4.0 Understand the warping.
    4.1   Define warping.
    4.2   Objects of warping.
    4.3   Classify the warping.
    4.4   Describe beam-warping machine.
    4.5   Describe sectional warping machine.
    4.6   Mention the different types of faults & their remedies in warping.
    4.7   Calculate the production and efficiency of warping processes.

5.0   Understand sizing.

   5.1   Define sizing.

   5.2   State the objects of sizing.

   5.3   Discuss the different types of size ingredients.

   5.4   State the functions of size ingredients.

   5.5   Mention the factors to be considered for selection of size ingredients.

   5.6   Mention the various size recipe for different types and count of yarn.

6.0   Understand the size preparation for warp.

   6.1   Mention the different types of size mixing equipments.

   6.2   Describe the size mixing procedure.

   6.3   Explain the pick-up percentage.

   6.4   Mention the different types of faults of sizing & their remedies.

   6.5   Calculate the sizing production and efficiency.

   6.6   Discuss the effect of under and over sizing.

7.0   Understand denting & drafting.

   7.1   Define drafting and denting.

   7.2   Classify drafting and denting.

   7.3   Discuss the procedure of drafting & denting.

   7.4   Calculate the drafting & denting.

8.0   Understand reed count & heald count.

   8.1   Define reed count and heald count.

   8.2   Classify reed count and heald count.

   8.3   Calculation of reed counts & heald count.

   8.4   Define tie-up & auto knotting.

   8.5   Describe tie-up & auto knotting.

   8.6   Distinguish between tie-up & auto knotting.

9.0   Understand weaving.

   9.1   Define weaving

   9.2   State the term loom.

   9.3   Discuss the historical development of loom.

   9.4   Discuss about handloom.

   9.5   State the scope of handloom.

10.0   Understand power loom.

   9.1   Define power loom, Automatic loom, Semi-automatic loom.

   9.2   Classify power loom.

   9.3   Distinguish between semi-automatic & automatic loom.

   9.4   List the main parts of power loom.

9.5   State the following accessories of loom (Heald shaft, Shuttle, Picker, Reed, Beam, lease rod, Picking Stick, side lever).

11.   Understand the motions of loom
11.1 State the motions of loom.
11.2 Classify the motions of loom.
11.3 Discuss primary, secondary & Tertiary, motions of loom.
11.4 List the different tertiary motions of loom.

12.0   Understand the basic idea of knitting.
12.1   Define knitting.
12.2   Discuss the history of knitting.
12.3   Mention the types of knitting
12.4   Discuss characteristics of knit yarn.
12.5   Define warp and weft knitting.
12.6   Distinguish between knitting and weaving.
12.7   Distinguish between warp knitting & weft knitting

Practical
1. Identify and draw the different packages, cone, cheese, pirn, bobbin and warp beam.
2. Identify and draw different types of yarn guides.
3. Identify & draw different types tensioning device.
4. Show the yarn path of cone and cheese Winding machine.
5. Draw the driving diagram of a pirn- winding machine.
6. Draw the driving diagram of a sectional-warping machine.
7. Draw the driving diagram of a warping machine.
8. Prepare size recipe for particular warp yarn.
9. Draw different types creels (cone, cheese & beam)
10. Draw diagram of slasher sizing machine and show the yarn path through the machine.
11. Identify different parts of loom.
12. Draw different parts of power loom.
13. Practice loom operation.
14. Draw different accessories of loom (shuttle, picker, picking stick, side lever, beam, lease rod, heald shaft etc).
15. Practice knitting machine.

Reference books
1. Knitted clothing technology- terry brackenbury.
2. Fabric manufacturing-1 – Md. Abdul khalique

6621   **Computer application-I**

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Objectives
- **To develop skill to use computer and computer operating system.**

- **To perform skill on using word processing software packages to create documents.**
- **To perform skill on using presentation software packages for documents presentation.**
- **To perform skill on using Internet and e-mail for sending and receiving documents.**

Short Description

Computer hardware System, Operating Systems, perating system environment, Customizing and configuring operating System files; Utility software and Anti viruses; Fundamentals of word processing; Create Simple documents; Print and preview the document; Manage files; Format the documents; Merge files; skill on presentation software, skill on Internet, e-mail and web browsing.

Detail Description

1.   Show skill on computer hardware.
Identify the main components of Personal Computer.
Identify the CPU components and commonly used I/O devices and memories.
Identify Primary and secondary storage devices & demonstrate the maintenance of the devices.
Identify the allied equipment used with PC system(UPS, Stabilizer band IPS).
Make the cable connection of PC system, UPS and printer with power line.
Turn ON the power Switch and demonstrate booting effect of PC system.

2   Practice on windows operating system environment.
Observe the windows Screen and identify each item on desktop.
Show the function of start button & taskbar.
Start and quit programs.
Switch between programs.
Open and close a document.
Find something using find command.
Start a program by using run command.

3   Practice on customizing and configuring windows operating system.
Change system setting (say, system date, time, password, etc).
Configure the taskbar, shortcuts, desktop items etc.
Install driver software & configure printer, plotter, mouse & other PC equipment.
Use windows explorer for copy, move, delete or rename files and folder.
Add items to the start menu.
Create a shortcut on the desktop.
Customize windows i.e. desktop colors, patterns, wallpaper, screen saver, etc.

4   Practice on advance features of windows operating system and disk utilities.
Use windows efficiently (i.e. copying, moving files quickly).
Organize your applications into groups (i.e. creating & deleting a group).
Install a new application program.

Back up, compare and restore files.
Freeze disk space (i.e.check your system's disk space, delete unnecessary files).

5   Practice on Disk Operating System(DOS).
Restart the computer in DOS mode.
Use internal and external DOS commands.
Create,delete and view directories.
Change directories.
Use wild card in DOS mode.

6   Perform skill in managing disk.
Format and unformat a disk.
Create a system disk.
Make a system disk.
Restore directories and files.
Recover files from defective disks.

7   Perform skill in working with files and folder.
Organize files and folders.
Copy files (copy a single file, a group of files).
Rename a file.
Delete files (delete a single file, a group of files).
Copy directories & sub directories.
Show directories such as directory tree directory name, paths, and the current directory.

8   Perform skill in working with utilities software and anti viruses.
Run anti virus software (say Toolkit, Norton Anti virus, PC cillin, Kaspersky etc) and scan for viruses.
Protect the computer from viruses.
Run utility software such as PC, Tools, NC, NU, etc.
Use utility software for copying, renaming, deleting and moving folders or files.
Develop keyboard skills by standard touch typing rules using typing tutor packages.

9   Project1: Connect each part of a personal computer (PC) ,operate it with windows operating system and install / uninstall programs/softwares.

Word Processing
10   Practice on creating a simple document using word processor.
Open windows based word processor and identify the different elements of the editing window.
Type text, edit text using word processor.
Select text and modify the text.
Save the document then quit & reopen the document.
Copy, move, and delete text.
Copy from one word document to another.

11   Practice on working with graphics and drawing.
Import graphics using insert picture command.
Use clipboard to insert art.
Resize graphics, crop graphics with mouse and with picture command.
Open drawing tools bar.
Draw a textbox and write text to it.

Draw graphs using different objects from the drawing tools bar.
Group, Ungroup, rotate and flip objects.
Fill drawn items with different color, change line styles, arrow heads, line colors & shades of gray.

12   Show skill on managing file.
Open previously saved documents.
Open documents form or within word.
Open non-word documents.
Open documents as read only.
Find files, searching by file names, dealing with large lists,
        Searching inside documents.
Save under a different file name and save to other location.
Save in non-word formats.
Make backup files for safe keeping and recover damaged file.

13   Show skill on formatting a document.
Change document margins.
Set margin with the page setup dialog box.
Drag margins in pint preview.
Pint in the margins.
Repaginate documents.
Force page breaks and force paragraphs to start on a new page.
Move and delete page breaks.
Keep things (lines, paragraphs, etc.) together on a page.

14   Show skill in selecting characters and fonts.
Format the character with the formatting toolbar.
Create and use different options of font dialog box.
Create keyboard shortcuts for character formatting.
Underline text (double, single, dotted, etc) and create bold
        Italicized character.
Expand and condense character spacing.
Create superscripts and subscripts and color character.
Demonstrate the change case command.
Remove and toggle to remove character formatting.
 Type special characters and symbols using the symbol command.
Bullet the existing paragraphs.
Type new bullet lists, change bullet styles and specify custom bullets.

15   Practice on paragraphs, line spacing, borders and shading.
Create paragraphs and split text into multiple paragraph.
Join and delete paragraphs.
Format the paragraph with the formatting toolbar, paragraph dialog
        box & keyboard   shortcuts.
Index paragraphs automatically and index with the ruler, toolbar keyboard shortcuts and with
paragraph dialog box.
Align and justify text and a adjust the space between lines such as single spacing, double spacing etc.
Create and remove borders and shading.
Create lines with the border command.
Show the border toolbar.
Show custom border and lines increase the space between border and text.

16   Practice on tables and Perform skill in modifies table design.

Create a simple table using table button & table menu.

Enter and edit text in a table.

Select cells, columns, rows group of cells and the whole table.

Add rows at the end and in the middle of a table, than delete rows.

Change row heights, and resize rows with cell height and width.

Change the spacing between rows.

Insert columns at the right edge and in the middle of a table, then delete the columns.

Change column and cell width with the ruler and the auto fit bottom.

Marge cells.

Change the space between columns merge different cells.

17   Project 2 : Create a complete document(such as a personal bio-data) with MS Word in Bengali and English using all necessary formating with graphics,table and save it in a created folder.

18   Practice on previewing & printing.

Connect printer to computer and keep paper in the printer tray.

Open page setup dialogue box and set the paper size.

Show print preview to adjust document.

Open print dialog box options to print document.

Show, use and leave print dialog box.

Presentation Software

19 Create a powerpoint Presentation.

19.1   Identify the different components of MS powerpoint package.

19.2   Design templates.,colour schemes, animation schemes etc.

19.3   Add /delete slides in the Presentation.

19.4   Add pictures, graphs, charts and other objects into slides.

19.5   Animate text and other objects in a very attractive way or motion.

19.6   Save and execute the   slides.

20 Enhance powerpoint Presentation.

20.1   Use sound effects and custom path of   animation effects in the Presentation.

20.2   Add video clips.

20.3   View slides of powerpoint Presentation in different ways(for
         exmple outlining,slide shorer etc.).

20.4   Reorder slides on the outline tab.

20.5   Preview and print the Presentation.

21. Perform attracive Presentation using MS powerpoint.

21.1   Customize slide show setup for a prticulr audiance.

21.2   Setup a slide show, rehashing and timing of a Presentation.

21.3   Review and adjust slide timing   as per requirements.

21.4   Perform skill on Packaging for CD and Show the Presentation**.**

22. Perform skill on Internet applications.

22.1   Connect to the Inernet using dial up or broadband connection.

22.2   Identify the different components of browsing softwares like
          Internet explorer, mozila firefox etc.

22.3   Browse and visit the reputed websites all over the world.
22.4   Use the search engines for searching informaion on the web.
22.5   Read news papers from the Internet.

23. Perform skill on Electronic mailing system.
23.1 Create an e-mail account (on yahoo, hotmail, gmail etc.)
23.2 Compose an e-mail message.
23.3 Attach file to an e-mail message and open an attached file.
23.5 Send and receive e-mil messages by using your created account..
23.6 Delete messages temporarily and permanently.
23.5 Sign out from your created e-mail account.

5931　　　　　　　　**MATHEMATICS – III**

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Objectives

- To enable in solving the simultaneous equations with the help of determinant and matrix.
- To make understand the exponential series.
- 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 .

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

<u>Algebra</u>

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 $e^x = 1 + \dfrac{x}{\underline{|1}} + \dfrac{x^2}{\underline{|2}} + \dfrac{x^3}{\underline{|3}} + \dfrac{x^4}{\underline{|4}} \ldots \ldots$ to ∞

4.4   Solve problems of the followings types :

i) $1 + \dfrac{1}{\underline{|2}} + \dfrac{1}{\underline{|4}} + \dfrac{1}{\underline{|6}} + \ldots \ldots$ to ∞

ii) $\dfrac{1}{\underline{|2}} + \dfrac{1+2}{\underline{|3}} + \dfrac{1+2+3}{\underline{|4}} + \dfrac{1+2+3+4}{\underline{|5}} + \ldots \ldots$ to ∞

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

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

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

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

5.5   Solve problems of the following types.

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

    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 $K = r^2 \cos^{-1} \dfrac{d}{r} - d\sqrt{r^2 - d^2}$

6   Apply the principle of properties of triangles.

6.1   Prove the followings identities :

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

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

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

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

6.2   Establish the followings.

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

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

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

6.3   Solve the problems of the following types:

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

ii)   An object experiences two forces F_1 and F_2 of magnitude 9 and 13 Newtons 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) $A = \dfrac{\sqrt{3}}{4} a^2$, a = length of a side of equilateral triangle.

ii) $A = \dfrac{c}{4} \sqrt{4a^2 - c^2}$, 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.

5922   **PHYSICS–II**   T P C
                                                             3 3 4

Aims

- To provide a foundation in scientific principles and processes for the understanding and application of technology.
- To develop an understanding of fundamental scientific concepts through investigation and experimentation.
- To provide a common base for further studies in technology and science.
- To develop the basic knowledge of modern physics.

Short description

Thermometry; Calorimetry, Expansion of materials (effect of heat), Heat transfer, Nature of heat and its mechanical equivalent, Engine.Principles of light and Photometry; Reflection of light, Refraction of light, lens. Concept of Electron and photon; structure of atom, Theory of Relativity.

Detail description
Theory :

1.   Thermometry
   1.1   Define heat and temperature.
   1.2   Mention the units of measurement of heat and temperature.
   1.3   Distinguish between heat and temperature.
   1.4   Identify the sources of heat.
   1.5   Identify the range of the Celsius scale determined by the boiling point and melting point of water
   1.6   Compare the Celsius scale, Roamer scale, Fahrenheit scale, Kelvin scale and Rankin scale of temperature measurement.
   1.7   State the construction and graduation of a mercury thermometer.
   1.8   Describe the operation of different types of thermometers (e.g., maximum and minimum thermometer, clinical thermometer).

2.   Heat capacity of materials (calorimetric)
   2.1   State the heat as a form of energy.
   2.2   Define specific heat capacity.
   2.3   State SI units of measurement of specific heat capacity as J/Kgc^0 or J/Kgk^0.
   2.4   Define thermal capacity and water equivalent.
   2.5   Differentiate between thermal capacity and water equivalent.
   2.6   Mention the specific heat capacity of different materials.
   2.7   Prove the total heat gained by an object is equal to the sum of the heat lost by all the surrounding objects.
   2.8   Identify specific latent heat as the energy consumed or liberated when water vaporizes or condenses and when ice melts or freezes.
   2.9   Explain the effects of a change in pressure on the melting point and boiling point of water.
   2.10   Define various kinds of specific latent heat.
   2.11   Determine the latent heat of fusion of ice and latent heat of vaporization of water.

3. Effects of heat on dimension of materials

3.1   Show that different materials change in size at different amounts with the same heat source.

3.2   Explain the meaning of differential expansion in bimetallic strip, thermostats, compensated pendulum etc.

3.3   Explain the methods of overcoming problems caused by the expansion of materials in buildings, machinery, railway lines and bridges.

3.4   Define the co-efficient of linear, superficial and cubical expansion of solids.

3.5   Mention the units co-efficient of linear, superficial and cubical expansion of solids.

3.6   Mention the linear, Superficial and cubical expansion of a range of common engineering materials.

3.7   Define real and apparent expansion of liquid.

3.8   Define and explain the co-efficient of real and apparent expansion of liquid.

3.9   Distinguish between the co-efficient of real and apparent expansion of liquid.

3.10   Determine the co-efficient of real and apparent expansion of liquid.

4. Heat transfer

4.1   Identify the phenomenon of heat transferring from hot bodies to cold bodies.

4.2   Explain the methods of heat transfer by conduction, convection and radiation with examples of each type of transfer.

4.3   Define thermal conductivity (K) & rate of heat transfer.

State the SI units of thermal conductivity as $\dfrac{w}{mk}$ or $\dfrac{w}{mc}$

4.4   List the factors which determine the quantity of heat (Q) flowing through a material.

4.5   Show that the quantity of heat flowing through a material can be found

from $Q = \dfrac{KA\ (\theta_H - \theta_C)t}{d}$

4.6   Outline the properties of materials which give thermal insulation.

4.7   Explain Characteristics of radiant heat energy.

4.8   Describe Emissive power and absorptive power of radiant heat.

4.9   State Stefan-Boltzman Law,

4.10   State Newton's law of cooling.

4.11   State wiens law.

4.12   Explain Green house effect.

5. Nature of heat and its mechanical equivalent

5.1   Describe the caloric theory and kinetic theory of heat.

5.2   State the drawbacks of the caloric theory of heat.

5.3   Explain the mechanical equivalent of heat.

5.4   Explain the first law of thermodynamics .

5.5   Explain Isothermal and adiabatic change.

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    5.6   Explain Specific heat of a gas, Molar specific heat or molar heat capacity.

    5.7   Relate between pressure and volume of a gas in adiabatic Change i, e;$PV\gamma$=const.

    5.8   Difference between C_P and C_v for an ideal gas ($C_P-C_v=R$)

6. 2nd law of thermodynamics

6. 2nd law of thermodynamics

    6.1   State and Explain Reversible process and irreversible process.

    6.2   State & explain 2nd law of thermodynamics

    6.3   Explain heat engine.

    6.4   Explain the principle of work of a heat engine.

    6.5   Identify thermal efficiency of a heat engine.

    6.6   Explain the working principles of internal combustion and external combustion   engines (with fair sketches)

    6.7   Distinguish between internal combustion engine and external combustion engine. Entropy : Definition, unit and significant.

    6.8   Explain Change of entropy in a reversible and irreversible process.

    6.9   Give an example of increase of entropy in irreversible process.

7.   Preliminaries of light and photometry

    7.1   Define light, medium (transparent, translucent, opaque), luminous & non-luminous bodies, parallel, convergent & divergent rays, beam.

    7.2   Show the travel of light in straight line.

    7.3   Define photometry, luminous intensity, luminous flux, brightness and illuminating power.

    7.4   Mention the units of luminous intensity, luminous flux, brightness and illuminating power.

    7.5   Mention relation between luminous intensity & illuminating power.

    7.6   Explain inverse square law of light.

    7.7   Describe the practical uses of light waves in engineering.

8.   Reflection of light

         Define mirror (plane & spherical), image (real & virtual) and magnification of images.

         Describe the reflection of light.

         State the laws of reflection of light.

         Express the verification of laws of reflection.

         Define pole, principal axis, center of curvature, radius of curvature, principal focus in case of concave & convex mirrors.

         Find the relation between focal length & radius of curvature of a concave & convex mirror.

         Express the general equation of concave and convex mirror.

9.   Refraction of light

    9.1   Define refraction of light Give examples of refraction of light

    9.2   State the laws of refraction and Express the verification of laws of refraction

    9.3   Define absolute and relative refractive index and Relate absolute and relative refractive index

9.4   Explain the meaning of total internal reflection and critical angle and Relate total internal reflection and critical angle.

9.5   Give examples of total internal reflection.

9.6   Describe refraction of light through a prism.

9.7   Express the deduction of the relation between refractive index, minimum deviation and angle of the prism.

9.8   Explain Dispersion of light.

9.9   Define lens and mention the kinds of lens.

9.10   Define center of curvature, radius of curvature, principal axis, 1_{st} and 2_{nd} Principal focus, optical center and power of lens.

9.11   Express the deduction of the general equation of lens (eoncave & convex).

9.12   Define Combination of two thin lenses and equivalent lens.

9.13   Identify and List uses of lens.

10. Electron and photon :

Describe Electrical conductivity of gases.

Describe Discharge tube.

Cathode ray : Definition and its properties

X-ray : Definition, properties & uses

Discuss Photo electric effect.

Derive Einstein's photo electric equation.

11. Structure of atom

11.1   Atomic models: Thomson, Rutherford and Bohr model.

11.2   Bohr Hydrogen atom & the theory of hydrogen spectra .

11.3   Define and explain Radio activity.

11.4   Describe Radio active rays.

11.5   Deduce radioactive decay law.

11.6   Define half-life & mean life of radioactive atoms.

11.7   Define nuclear fission & fusion.

12. Theory of relativity

12.1   Express the theory of relativity.

12.2   Mention different Kinds of theory of relativity.

12.3   Explain special theory of relativity and its fundamental postulate.

12.4   Deduce Einstein's mass -energy relation

Practical

1. Compare the operation of common thermometers.
2. Determine the co-efficient of linear expansion of a solid by Pullinger's apparatus.
3. Measure the specific heat capacity of various substances.(Brass, steel).
4. Determine the latent heat of fusion of ice.
5. Determine the water equivalent by calorimeter.
6. Compare the luminous intensity of two different light sources.
7. Verify the laws of reflection.
8. Find out the focal length of a concave mirror.
9. Determine the refractive index of a glass Slab.
10. Determine the angle of Minimum deviation and refractive index of a glass prism by using I-D graph.

5821 **SOCIAL SCIENCE – II** **T P C**
(BANGLADESH : HISTORY & CULTURE) **2 0 2**

উদ্দেশ্য

- পদ্মা-মেঘনা-যমুনা বদ্বীপ অধ্যুষিত ভৌগোলিক অঞ্চলে বাঙ্গালী সমাজ গঠন এবং নানা ঐতিহাসিক বিবর্তনের পর্যায় পেরিয়ে গঠিত আধুনিক বাংলাদেশ সম্পর্কে শিক্ষার্থীদের যথার্থ অবগত করানো এবং তাদের সঠিক বোধ সৃষ্টিকরণ।
- প্রাকৃতিক ও অর্থনৈতিক কাঠামোর পরিমন্ডলে বাংলাদেশের সাংস্কৃতিক বিকাশের সাথে শিক্ষার্থীদের উজ্জীবিত করে বাংলাদেশের যোগ্য ও পরিশীলিত নাগরিক হিসাবে যথার্থ বিকশিতকরণ।

সংক্ষিপ্ত বিবরণী

ইতিহাস

- ইতিহাসের সংজ্ঞা।
- বাংলাদেশের আবহাওয়া ও অধিবাসী।
- প্রাগৈতিহাসিক ও প্রাচীনকালে বাংলাদেশ।
- বাংলায় মুসলমানদের আগমন, প্রতিষ্ঠালাভ ও শাসন — খলজী ও তুর্কী শাসনে বাংলায় স্বাধীন সুলতানী প্রতিষ্ঠা; বাংলাদেশে শাহী আমল, আফগান ও মোঘল আমলে বাংলার শাসন।
- বাংলায় ইউরোপীয় বণিকদের আগমন; নবাবী আমলে বাংলার শাসন ব্যবস্থা; বাংলায় ইংরেজ শাসন ক্ষমতা লাভ ও প্রতিষ্ঠা।
- ব্রিটিশ বিরোধী সশস্ত্র প্রতিরোধ আন্দোলন; সংস্কার আন্দোলন ও জাতীয়তাবাদের বিকাশ এবং বাংলার নবজাগরণ; বঙ্গভঙ্গ ও বঙ্গভঙ্গ উত্তরকালে বাংলার রাজনীতি ও দেশ বিভাগ।
- পাকিস্তান আমলে বাংলাদেশ এবং বাংলাদেশের মুক্তি সংগ্রাম ও যুদ্ধ।

সংস্কৃতি

সংস্কৃতির সংজ্ঞা, আদিযুগে বাংলার সমাজ-সংস্কৃতির রূপরেখা, সুলতানী, মোঘল ও নবাবী আমলের বাংলার সমাজ সংস্কৃতি; ইংরেজ আমলে বাংলার সমাজ ও সংস্কৃতি।
রবীন্দ্র ও নজরুল যুগ এবং রবীন্দ্র ও নজরুল উত্তর বাংলার সমাজ ও সংস্কৃতি; পাকিস্তান আমলে বাংলাদেশের সাংস্কৃতিক রূপরেখা; স্বাধীনতাউত্তর বাংলাদেশের সংস্কৃতি।

বিশদ বিবরণী

ইতিহাস

১. **ইতিহাসের সংজ্ঞা, প্রাগৈতিহাসিক আমলের বাংলাদেশ এবং বাংলাদেশের আবহাওয়া ও অধিবাসী সম্পর্কে অবগত হওয়া।**
    ১.১   ইতিহাসের সংজ্ঞা প্রদান।
    ১.২   বাংলাদেশের প্রাচীন জনপদ উলেখ করা।
    ১.৩   বঙ্গ বা বাংলা নামের উৎপত্তি ব্যাখ্যা করা।
    ১.৪   বঙ্গের সীমারেখা চিহ্নিত করা।
    ১.৫   বাংলার আবহাওয়া ও এর অধিবাসীদের চরিত্রে আবহাওয়ার প্রভাব বিবৃত করা।
    ১.৬   প্রাগৈতিহাসিক ও প্রাচীন বাংলার আর্থসামাজিক ব্যবস্থা বর্ণনা করা।

২. **বাংলাদেশে গুপ্ত, রাজা শশাঙ্ক, পাল ও মুসলিম শাসন সম্পর্কে অবগত হওয়া।**
    ২.১   গুপ্ত শাসন আমলে বাংলার শাসনব্যবস্থা বর্ণনা করা।
    ২.২   রাজা শশাঙ্কের রাজ্য বিজয় ও শাসন বর্ণনা করা।
    ২.৩   বাংলার অরাজকতা ও হিউয়েনসাং এর আমলে বাংলার অবস্থা বর্ণনা করা।
    ২.৪   গোপাল কর্তৃক অরাজকতার অবসান ঘটানোর কৃতিত্বের বর্ণনা করা।

২.৫   বাংলাদেশে মুসলমানদের আগমন ও বখতিয়ার খলজীর বাংলা বিজয় বর্ণনা করা ।

২.৬   বাংলাদেশে স্বাধীন সুলতানী শাসন প্রতিষ্ঠায় শামছুদ্দিন ইলিয়াশ শাঞ্জীর কৃতিত্ব বর্ণনা করা ।

২.৭   বাংলায় মোঘল শাসনের ইতিবৃত্ত ব্যাখ্যা করা ।

২.৮   ১৭৫৭ সালের পলাশীর যুদ্ধের কারণ, ঘটনা ও ফলাফল বর্ণনা করা ।

৩.   **পলাশীযুদ্ধ পরবর্তী অবস্থায় ইস্ট ইন্ডিয়া কোম্পানীর আধিপত্য বিস্তার সম্পর্কে জ্ঞাত হওয়া ।**

৩.১   দেওয়ানী, দ্বৈতশাসন ও বাংলার দুর্ভিক্ষ বর্ণনা করা ।

৩.২   ইংরেজদের চিরস্থায়ী বন্দোবস্ত এবং এর ফলাফল বর্ণনা করা ।

৩.৩   বাংলাদেশে জমিদার, প্রজাব্যবস্থা প্রতিষ্ঠা এবং আর্থ-সামাজিক ব্যবস্থায় জমিদারদের ভূমিকা ও প্রজাকুলের সার্বিক
      অবস্থা উলেখ করা ।

৩.৪   ১৯০৫ সালের বঙ্গভঙ্গ আন্দোলন ও ফলাফল ব্যখ্যা করা ।

৩.৫   হাজী শরীয়ত উলাহর ফরায়েজী আন্দোলন ও এর ফলাফল ব্যখ্যা করা ।

৪.   **বঙ্গভঙ্গউত্তর রাজনীতি ও দেশ বিভাগ সম্পর্কে অবহিত হওয়া ।**

৪.১   ১৯৩৭ এর নির্বাচন ও এর বৈশিষ্ট্য উলেখ করা ।

৪.২   লাহোর প্রস্তাব ব্যক্ত করা ।

৪.৩   ১৯৪৩ এর বাংলার দুর্ভিক্ষের কারণ ও এর পূর্বাপর অবস্থা উলেখ করা ।

৪.৪   পাকিস্তানের পূর্বাঞ্চল হিসাবে ১৯৪৭ সালে পূর্ব পাকিস্তানের প্রতিষ্ঠা ব্যাখ্যা করা ।

৫.   **পাকিস্তান আমলে বাংলাদেশের (তৎকালীন পূর্ব পাকিস্তান) রাজনীতি, অর্থনীতি ও সামাজিক অবস্থা সম্পর্কে অবগত
      হওয়া ।**

৫.১   ভাষা আন্দোলন ও সমকালীন রাজনৈতিক ও সামাজিক প্রেক্ষিত ব্যক্ত করা ।

৫.২   আওয়ামীলীগ প্রতিষ্ঠা, যুক্তফ্রন্ট ও ২১ দফা দাবীর ভিত্তিতে নির্বাচন অনুষ্ঠান এবং যুক্তফ্রন্টের মন্ত্রিসভা গঠন ও
      বাতিল আলোচনা করা ।

৫.৩   পাকিস্তানের সামরিক অভ্যুথান, আইয়ুব বিরোধী আন্দোলন ও ৬ দফা দাবী, আগরতলা ষড়যন্ত্র মামলার ইতিবৃত্ত
      বর্ণনা করা এবং পূর্ব-পশ্চিম পাকিস্তানের অর্থনৈতিক বৈষম্যের খতিয়ান উলেখ করা ।

৫.৪   ১৯৬৯ সালের গণঅভ্যুথান এবং এর ধারাবাহিকতায় বাংলাদেশের মুক্তিযুদ্ধ ও স্বাধীন সার্বভৌম বাংলাদেশ প্রতিষ্ঠা
      করার পটভূমি ও ঘটনা প্রবাহ বর্ণনা করা ।

৫.৫   ১৯৭১ সালের ঐতিহাসিক মুক্তিযুদ্ধ এবং স্বাধীন সার্বভৌম বাংলাদেশের অভ্যুদয় বর্ণনা করা ।

৬.   **স্বাধীন সার্বভৌম বাংলাদেশের রাজনীতি ও আর্থ-সামাজিক অবস্থা সম্পর্কে অবগত হওয়া ।**

৬.১   যুদ্ধোত্তর স্বাধীন সার্বভৌম বাংলাদেশের আর্থ-সামাজিক পুনর্গঠন কর্মতৎপরতা বর্ণনা করা ।

৬.২   ১৯৭৩ সালের নির্বাচন এবং ১৯৭৪ সালে সংবিধানের ৪র্থ সংশোধনীর মাধ্যমে সরকার পদ্ধতির পরিবর্তন ব্যক্ত
      করা ।

৬.৩   ১৯৭৫ সালের ১৫ আগস্ট জাতির জনক বঙ্গবন্ধু শেখ মুজিবুর রহমান -এর শাহাদাত বরণ এবং রাজনৈতিক
      পটপরিবর্তন ।

৬.৪   ১৯৮১ সালে রাষ্ট্রপতি জিয়াউর রহমানের শাহাদাত বরণ, ১৯৮২ সালের সামরিক অভ্যুথান এবং রাজনৈতিক
      পটভূমি পরিবর্তন ।

৬.৫   ১৯৯০ সালে এরশাদ সরকারের পতন এবং তত্ত্বাবধায়ক সরকার পদ্ধতি অনুসংগে ১৯৯১ সনের নির্বাচন এবং
      গণতান্ত্রিক অনুশীলনের সূচনা ।

সংস্কৃতি

৭.   **সংস্কৃতির সংজ্ঞা এবং প্রাচীন ও মধ্যযুগীয় বাংলার সংস্কৃতি ও সাহিত্য চর্চা সম্পর্কে অবগত হওয়া ।**

৭.১   সংস্কৃতির সংজ্ঞা দান ।

৭.২   প্রাচীন বাংলার ভাষা সাহিত্য ও সংস্কৃতির রূপরেখা বর্ণনা করা ।

৭.৩   বাঙ্গালী সংস্কৃতি নির্মাণে মর্সিয়া ও পুঁথি সাহিত্যের প্রভাব বর্ণনা করা ।

৮.	আধুনিক যুগে বাংলাদেশের সংস্কৃতি ও বাংলাভাষার আধুনিক রূপলাভ সম্পর্কে অবগত হওয়া ।
	৮.১	ইংরেজ শাসন আমলে সামাজিক কুসংস্কার দূরীকরণে (স্যার সৈয়দ আহমদ, সৈয়দ আমীর আলী ও রাজা রামমোহন রায়) এর আবির্ভাব এবং তাদের কর্মতৎপরতা ব্যাখ্যা করা ।
	৮.২	ক্যারি সাহেব এবং ফোর্ট উইলিয়াম কলেজ/সংস্কৃত কলেজ স্থাপনের মাধ্যমে বাংলার নতুন সংস্কৃতির রূপলাভ বর্ণনা করা ।
	৮.৩	ইংরেজদের শিক্ষানীতি প্রবর্তন ব্যাখ্যা করা এবং কলিকাতা বিশ্ববিদ্যালয় ও ইসলামিয়া মাদ্রাসা স্থাপনের মাধ্যমে বাংলার সংস্কৃতির বিকাশ ব্যক্ত করা ।
	৮.৪	ঢাকা বিশ্ববিদ্যালয় প্রতিষ্ঠার ইতিবৃত্ত ব্যাখ্যা করা ।

৯.	১৯৪৭ এর দেশ বিভাগ ও সাংস্কৃতিক অবস্থার পরিবর্তন সম্পর্কে অবগত হওয়া ।
	৯.১	তৎকালীন পূর্ব পাকিস্তানের তমুদ্দুন মজলিসের ভূমিকা উল্লেখ করা ।
	৯.২	১৯৫২ সালের ভাষা আন্দোলনের সাংস্কৃতিক গুরুত্ব উল্লেখ করা ।
	৯.৩	ঢাকা কেন্দ্রিক শিল্পী-সাহিত্যিকদের বাংগালী সংস্কৃতি বিনির্মাণের ভূমিকা পালন উল্লেখ করা ।
	৯.৪	'৬৯ এর গণ আন্দোলনে সাংস্কৃতিক কর্মীদের ভূমিকা উল্লেখ করা ।
	৯.৫	বাঙলা একাডেমীর প্রতিষ্ঠা এবং বাংলা ভাষা ও সাহিত্যে এর ভূমিকা উল্লেখ করা ।
	৯.৬	আন্তর্জাতিক মাতৃভাষা দিবস হিসেবে ২১ ফেব্রুয়ারির তাৎপর্য ব্যক্ত করা ।
	৯.৭	ভাষা, শিল্প সাহিত্য চর্চায় সংবাদপত্র ও ইলেকট্রনিক মিডিয়ার ভূমিকা উল্লেখ করা ।

১০.	সংস্কৃতির উপর গ্রামীণ অর্থনীতির প্রভাব অবগত হওয়া ।
	১০.১	তাঁত শিল্প ও মসলিন উৎপাদনের ইতিবৃত্ত ব্যাখ্যা করা ।
	১০.২	পাট চাষের অর্থনৈতিক প্রভাব ব্যক্ত করা ।
	১০.৩	বাঙ্গালী সংস্কৃতির অংশ হিসেবে দুগ্ধজাত মিষ্টান্ন সামগ্রীর (মিষ্টি, মাখন, দধি, পিঠা-পুলি প্রভৃতি) প্রভাব ব্যক্ত করা ।
	১০.৪	দেশীয় মেলা ও পার্বনের সাংস্কৃতিক গুরুত্ব ব্যাখ্যা করা ।
	১০.৫	গ্রামীণ পেশাজীবিদের (কামার, কুমার, তাঁতী, জেলে, ছুতার, ইত্যাদি) সাংস্কৃতিক গুরুত্ব ব্যাখ্যা করা ।

১১.	বাংলাদেশের সংস্কৃতিতে আদিবাসী সংস্কৃতি ও প্রত্ন তাত্ত্বিক নিদর্শনের অবদান সম্পর্কে অবগত হওয়া ।
	১১.১	বাংলাদেশের আদিবাসী সম্পর্কে উল্লেখ করা ।
	১১.২	বাংলাদেশের সংস্কৃতিতে গাড়ো, রাখাইন, সাওতাল, চাকমা আদিবাসীদের সংস্কৃতিক অবদান ব্যখ্যা করা ।
	১১.৩	বাংলাদেশের প্রাচীন সংস্কৃতির ঐতিহ্য হিসাবে মহাস্থানগড়, ময়নামতি ও পাহাড়পুরের প্রত্নতাত্ত্বিক নিদর্শনের বর্ণনা দান ।

সহায়ক পুস্তক

	১.	রহিম চৌধুরী, মাহমুদ ও ইসলাম, "বাংলাদেশের ইতিহাস (পরিবর্ধিত ও পরিমার্জিত)" ; নওরোজ কিতাবিস্তান, আগস্ট, ১৯৯৯ ।

	২.	কে, আলী "বাংলাদেশের ইতিহাস"; আজিজিয়া বুক ডিপো, ২০০১ ।

	৩.	সিরাজুল ইসলাম, "বাংলাদেশের ইতিহাস-১৭০৪-১৯৭১"; ১ম, ২য় ও ৩য় খন্ড; বাংলাদেশ এশিয়াটিক সোসাইটি, ফেব্রুয়ারি ২০০০ ।

	৪.	কো-আস্তোনভা, প্রি, কতোভঙ্কি, "ভারতবর্ষের ইতিহাস"; প্রগতি প্রকাশন, ১৯৮৮ ।

	৫.	গোপাল হালদার; "সংস্কৃতির রূপান্তর"; মুক্তধারা, মে ১৯৮৪ ।

	৬.	মোতাহের হোসেন চৌধুরী, "সংস্কৃতি কথা"; নওরোজ কিতাবিস্তান, জানুয়ারি ১৯৯৮ ।

	৭.	গোপাল হালদার, "বাংলা সাহিত্যের রূপরেখা-১ম ও ২য় খন্ড"; মুক্তধারা, জুলাই ১৯৭৮ ।

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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.