BANGLADESH TECHNICAL EDUCATION BOARD

Agargaon, Sher-E-Bangla Nagar

Dhaka-1207.

4-YEAR DIPLOMA IN ENGINEERING CURRICULUM
COURSE STRUCTURE & SYLLABUS
(PROBIDHAN-2022)

ARCHITECTURE TECHNOLOGY
TECHNOLOGY CODE: (61)

2nd SEMESTER
(Effective from 2022-2023 Academic Sessions)

DIPLOMA IN ENGINEERING CURRICULUM
COURSE STRUCTURE

(PROBIDHAN-2022)

TECHNOLOGY NAME: ARCHITECTURE TECHNOLOGY (61)

(2nd SEMESTER)

Sl	Subject		Period		Credit	Marks Distribution						
						Theory Assessment			Practical Assessment			Grand Total
	Code	Name	Theory	Practical		Continuous	Final	Total	Continuous	Final	Total	
1	25721	Bangla -II	2	-	2	40	60	100	-	-	-	100
2	25722	English-II	2	-	2	40	60	100	-	-	-	100
3	25912	Physics -I	3	3	4	60	90	150	25	25	50	200
4	25921	Mathematics-II	3	3	4	60	90	150	25	25	50	200
5	26121	Architectural Design-I	2	6	4	40	60	100	50	50	100	200
6	26411	Civil Engineering Materials	2	3	3	40	60	100	25	25	50	150
7	28511	Computer Office Application	-	6	2	-	-	-	50	50	100	100
Total			**14**	**21**	**21**	**280**	**420**	**700**	**175**	**175**	**350**	**1,050**

বিষয় কোড	বিষয়ের নাম	টি	পি	সি
২৫৭২১	বাংলা-০২	২	০	২

উদ্দেশ্য:

বাংলা ব্যাকরণ অংশে সকল ডিপ্লোমা পর্যায়ের শিক্ষার্থীদের মধ্যে ব্যাকরণ ও ভাষা দক্ষতা বৃদ্ধির সাথে দেশপ্রেম ও মূল্যবোধকে উজ্জীবিত করবে। পঠনে ও লেখনিতে শিক্ষার্থীদের দক্ষতা অর্জন, সৃজনশীল প্রতিভার বিকাশ সাধন, সাহিত্য সংস্কৃতির প্রতি আগ্রহ সৃষ্টি এবং দৃষ্টিভঙ্গির কাঙ্খিত পরিবর্তন আনয়নে সম্যক ধারণা পাবে।

শিখনফল:

- ব্যবহারিক জীবনে ভাষা শিক্ষার প্রয়োজনীয়তার বিভিন্ন দিক বর্ণনা করতে পারবে।
- ব্যাকরণের সংজ্ঞা, পরিচয়, বিষয়বস্তু ও পরিধি সম্পর্কে অবহিত হবে।
- বাংলা সাহিত্যের যুগবিভাগ সম্পর্কে ধারণা লাভ।
- যতিচিহ্নের বহুমুখী ও ব্যাপক ব্যবহার জেনে তা প্রয়োগ করতে পারবে।
- প্রমিত বাংলা বানানের নিয়মের আলোকে বাংলা শব্দ ও বাক্য শুদ্ধভাবে প্রয়োগ করতে পারবে।
- প্রশাসনিক, দাপ্তরিক ও বিভিন্ন শিক্ষা সংশ্লিষ্ট প্রয়োজনীয় শব্দ ও পরিভাষা ব্যবহার করতে পারবে।
- চিঠিপত্র, চাকরির দরখাস্ত, প্রতিবেদন, মুঠোফোন ও ই-মেইলে যোগাযোগের জন্য বাংলা ভাষায় বার্তা ও চিঠি লিখতে পারবে।
- পাঠ্যসূচিভুক্ত এবং পাঠ্য বহির্ভূত ভাষা-সাহিত্য পাঠ করে নিজের অনুভূতি প্রকাশ করতে ও লিখতে পারবে।

	ক্লাস	নম্বর
০১। বাংলা ব্যাকরণ ও ব্যাকরণ পাঠের গুরুত্ব।	০৩	০৩
১.১ বিষয়বস্তু ও পরিধি।		
১.২ ব্যাকরণ পাঠের গুরুত্ব ও প্রয়োজনীয়তা।		
০২। বাংলা ভাষা	০৩	০৫
২.১ ভাষার সংজ্ঞা, উৎপত্তি ও ক্রমবিকাশ।		
২.২ বাংলা সাহিত্যের যুগবিভাগ।		
২.৩ বাংলা ভাষার রূপ ও রীতি।		
০৩। বাংলা ধ্বনিতত্ত্ব	০৩	১০
৩.১ ধ্বনি ও বর্ণ, উচ্চারণ স্থান ও উচ্চারণ প্রকৃতি।		
৩.২ বাংলা একাডেমি কর্তৃক প্রমিত বাংলা বানানের নিয়ম।		
৩.৩ ণ-ত্ব বিধান ও ষ-ত্ব বিধান।		
০৪। রূপতত্ত্ব	০৩	০৯
৪.১ শব্দ, শব্দের শ্রেণিবিভাগ (সংজ্ঞা, উৎপত্তি, গঠন ও অর্থ অনুযায়ী)।		
৪.২ সমার্থক শব্দ, বিপরীত শব্দ, সমোচ্চারিত ভিন্নার্থক শব্দ ও পারিভাষিক শব্দ।		
০৫। বাক্যতত্ত্ব	০৩	০৫
৫.১ বাক্য গঠন রীতি ও বাক্য প্রকরণ।		
৫.২ বাক্যান্তর।		
৫.৩ যতিচিহ্ন।		
০৬। বাক্য সংকোচন, বাগধারা, প্রবাদ প্রবচন	০৩	০৫
৬.১ বাক্য সংকোচন।		

৬.২ বাগধারা।
৬.৩ প্রবাদ-প্রবচন।

০৭। বিরচন (ভাবসম্প্রসারণ, সারাংশ/সারমর্ম) ০৩ ০৫

৭.১ ভাবসম্প্রসারণ।
৭.২ সারাংশ/সারমর্ম।

০৮। ভাষণ ও প্রতিবেদন ০৩ ০৬

৮.১ জাতীয় দিবস বিষয়ক।
৮.২ প্রাতিষ্ঠানিক ও সংবাদপত্রে প্রকাশের উপযোগী।

০৯। পত্র লিখন ০৪ ০৬

৯.১ আবেদনপত্র ।
৯.২ যোগদানপত্র ও স্মারকলিপি ।
৯.৩ সংবাদপত্রে প্রকাশ ও যোগাযোগের জন্য ই-মেইল, ক্ষুদেবার্তা ।

১০। প্রবন্ধ রচনা ০৪ ০৬

১০.১ দেশপ্রেম, মুক্তিযুদ্ধ, স্মরণীয় দিবস ।
১০.২ প্রকৃতি, শিক্ষা, খেলাধুলা ।
১০.৩ বিজ্ঞান, জীবনী ।

সহায়ক গ্রন্থ:

০১। উচ্চতর স্বনির্ভর বিশুদ্ধ ভাষা শিক্ষা - ড. হায়াৎ মামুদ

০২। ভাষা সৌরভ
ব্যাকরণ ও রচনা - মাহবুবুল আলম

০৩। বাংলা লেখার নিয়ম কানুন - হায়াৎ মামুদ

০৪। প্রমিত বাংলা বানানের নিয়ম - বাংলা একাডেমি

০৫। উচ্চ মাধ্যমিক বাংলা সংকলন - জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড ।

০৬। বাংলা ব্যাকরণ ও নির্মিতি - জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড ।

Subject Code	Subject Name	Period per Week		Credit
25722	English-II	T	P	C
		2	0	2

Rationale	The main objective of this syllabus is to provide ample opportunities for the students to use English for a variety of purposes in different situations. Each chapter is based on a theme that contains reading text and a range of tasks and activities, designed to enable the students to practice the different skills, sometimes individually and sometimes in pairs or groups. This syllabus has integrated grammar items into the activities allowing grammar to assume a more meaningful role in learning language. Thus the students develop their language skills by practicing language activities and not merely knowing the rules of the language.
Learning Outcomes	After the completion of the course, learners will be able to: • Develop Reading, Writing, Listening &Speaking Skills • Acquire grammatical accuracy • Develop creative writing • Communicate effectively

Unit Description:

Unit	Topics with Contents/Lesson	Skills	Class (1 Period)	Final Marks
1. People or Institutions Making History	**NELSON MANDELA, FROM APARTHEID FIGHTER TO PRESIDENT** 1.1. Talk about the world famous personality. 1.2. Know some renowned. speeches of Nelson Mandela. 1.3. Understand the meaning of confusing words. 1.4. Develop reading, speaking & listening skills. **Listening Practice (Only for contentious assessment)** **Follow the link(please play 2/3 minutes customized video):** https://www.youtube.com/watch?v=w42rHdvFpVM	Develop Reading, Writing Speaking & Listening skills	**1**	**15**

Unit	Topics with Contents/Lesson	Skills	Class (1 Period)	Final Marks
2. Human Relationships	**ETIQUETTE AND MANNERS** 2.1. Define etiquette's and manners. 2.2. Know how to behave with elders and visitors. 2.3. Learn the sources of learning etiquettes and manners. 2.4. Interpret and critically appreciate stories, short plays. https://www.youtube.com/watch?v=jPj0Z2lb8jg	Enhance Reading, Writing Speaking & Listening skills	**1**	
3. Adolescence	**ADOLESCENCE AND SOME (RELATED) PROBLEMS IN BANGLADESH** 3.1. Define adolescence. 3.2. Know the adolescence related problems in Bangladesh. 3.3.Interpret and appreciate the information critically. https://www.youtube.com/watch?v=S05PBOIdSeE	Develop Reading, Writing Speaking & Listening skills	**1**	
4. Human Rights	**AMERIGO, A STREET CHILD** 4.1. Think about the life of street children. 4.2. Know their activities. 4.3. Describe the problems that they have in their lives. 4.4. Listen for specific information on radio, television and other announcements.	Develop Reading, Writing Speaking skills	**1**	
5. Diaspora	**WHAT IS DIASPORA?** 5.1.1. Learn new vocabulary. 5.1.2. Talk about simple present to express state. 5.1.3. Identify complex and compound sentences. 5.1.4. Describe people, places and different cultures.	Strengthen Reading, Writing Speaking & Listening skills	**1**	

Unit	Topics with Contents/Lesson	Skills	Class (1 Period)	Final Marks
	https://www.youtube.com/watch?v=awPKGBzCcXY			
	'BANGLATOWN' IN EAST LONDON 5.2.1. Learn narrative sentences. 5.2.2. Make casual connection, express attitudes. 5.2.3. Learn new words and vocabulary. 5.2.4. Describe people, places and different cultures.	Develop Reading, Writing Speaking skills	**1**	
6. Peace and Conflict	**"THE OLD MAN AT THE BRIDGE" BY ERNEST HEMINGWAY** 6.1. Learn synonyms. 6.2. Apprehend text. 6.3. develop higher-order thinking ability. 6.4. Read, tell and analyze stories.	Develop Reading, Writing Speaking skills	**1**	
7. Environment and Nature	**THREATS TO TIGERS OF MANGROVE FOREST** 7.1. Prepare report on particular matter. 7.2. Write slogans for posters. 7.3. Participate in conversation, discussions and debates.	Develop Reading, Writing Speaking skills	**1**	
8. Myths and Literature	**THE LEGEND OF GAZI** 8.1. Learn myth. 8.2. Learn simple past tense. 8.3. Read, tell and analyze stories.	Enhance Reading, Writing Speaking skills	**1**	
9. Path to Higher Education	**21ST CENTURY HIGHER EDUCATION** 9.1. Know 21st century education. 9.2. Learn the factors that. Determine the nature of higher education. 9.3. Know about the entrepreneurial thinking skills. 9.4. Ask for and give opinion/suggestions.	Develop Reading, Writing Speaking & Listening skills	**1**	

Unit	Topics with Contents/Lesson	Skills	Class (1 Period)	Final Marks
10.Grammar	**USE THE RIGHT FORM OF VERBS** 10.1.1. Use the verbs in correct form maintain the tense of the verb.	Learn grammar as sub-skill	**3**	**15**
	CHANGING VOICE FROM ACTIVE TO PASSIVE & VISE-VERSA 10.2.1. Change active voice to passive and vise-versa. 10.2.2. Use voice in sentence.	Learn grammar as sub-skill	**3**	
	APPROPRIATE PREPOSITIONS 10.3.1. Learn the appropriate usage of preposition. 10.3.2. Apply the appropriate Prepositions in sentence.	Learn grammar as sub-skill	**1**	
	COMPLETING SENTENCE 10.4.1. Gather knowledge of sentence structure. 10.4.2. Develop writing skills.	Learn grammar as sub-skill	**2**	
	PUNCTUATION AND CAPITALIZATION 10.5.1.Use punctuation's and capital letters appropriately in the Sentence.	Learn grammar as sub-skill	**1**	
	SENTENCE STRUCTURE 10.6.1. Analyze different type's grammatical terms. 10.6.2. Apply sentence correctly.	Learn grammar as sub-skill	**3**	
	PHRASE 10.7.1. Use phrases in conversation.	Learn grammar as sub-skill	**1**	
11.Composition	**PROCESS WRITING** 11.1.1.Use writing elements(prewriting, drafting, Revising and editing).	Strengthen Writing & Speaking skills	**1**	**30**
	DESCRIPTIVE, NARRATIVE AND CREATIVE WRITING (SUCH AS TELLING / COMPLETING STORIES) 11.2.1. Develop speaking fluency. Develop creative writing ability.	Develop Writing & Speaking skills	**1**	

Unit	Topics with Contents/Lesson	Skills	Class (1 Period)	Final Marks
	DIALOGUE WRITING	Develop Speaking & Writing skills	**1**	
	POSTER 11.3.1. Prepare poster. 10.10.2. Describe poster.	Extend creative thinking ability, Develop presentation and speaking skills	**1**	
	REPORT WRITING 11.4.1. Write reports on newspaper and problem identification.	Develop Reading & Writing skills	**2**	
	ACADEMIC WRITING 11.5.1.Analyze graphs and charts Summary writing. 10.12.2. Extend analytical skills.	Enhance Reading & Writing ability	**2**	
		Total	**32**	**60**

Recommended Books:

SL	Book Name	Writer Name	Publisher Name & Edition
01	**English For Today** **Classes XI – XII & Alim**	Quazi Mustain Billah Fakrul Alam M Shahidullah Shamsad Mortuza Zulfeqar Haider Goutam Roy	**NATIONAL CURRICULUM AND TEXT BOOK BOARD,BANGLADESH**

Website References:

SL	Web Link	Remarks
01	https://www.youtube.com/watch?v=w42rHdvFpVM	
02	https://www.youtube.com/watch?v=jPj0Z2lb8jg	
03	https://www.youtube.com/watch?v=S05PBOIdSeE	
04	https://www.youtube.com/watch?v=awPKGBzCcXY	

Marks Distribution (100)	
Attendance	05
Class Test(Listening Test)	06
Quiz Test (Speaking)	04
Presentation and Assignment	05
Midterm	20
Final	60
Total	**100**

Assessment:

1. **Test Items: Unseen Comprehension: (No text will be borrowed from the seen comprehension given in the text book, but the given assessment criterion can be followed. Texts may be taken from contemporary journals)**

Skills	Total Marks	Test Items	Notes
Listening	**06**	**MCQ, Gap filling, Taking Notes**	Test items must be newly prepared for each test by the Question setters themselves on their own.
Speaking	**04**	Describing/narrating answering questions based on everyday familiar topics/events/situations such as family, school, home city/village, books, games and sports, movie/TV show, recent events and incidents etc.	Five to ten sentences used coherently with acceptable English with understandable pronunciation

2. **Grammar Test Items:**
   - Gap filling activities without clues
   - Cloze test without clues
   - Using preposition in sentence
   - Use of punctuation and capitalization
   - Making sentence with given structure
   - Making sentence with phrase
3. **Composition Test Items:**
   - Writing process
   - Completing an incomplete stories
   - Writing dialogue on a given situation
   - Preparing an attractive poster on a given topic and describing it
   - Preparing report on given context
   - Describing a given graph/chart (descriptive, analyzing, analytic)
   - Writing summary (given seen comprehension) with title

DIPLOMA IN ENGINEERING
DETAILED SYLLABUS
PROBIDHAN-2022

Subject Code	Subject Name	Period per Week		
		T	P	C
25912	PHYSICS-I	3	3	4

Rationale	Physics is the basic science for all engineering students as well as diploma engineering students. To develop a foundation in scientific principle and processes for the understanding and application of various technology. It will help the students to study in technical subject of diploma engineering students and it is also pre-requisite of physics- 2. This subject will cover quantities, Motion, mass, weight, force, pressure, wave, sound, velocity of sound, work, power and energy, elasticity of matter, behavior of fluids, and gas.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to:** ➢ Describe Various types of quantities ➢ Enumerate Motion, mass, weight, force, pressure, wave, sound, velocity of sound, work, power and energy, elasticity of matter, behavior of fluids, and gas. ➢ Describe measurement of various quantities. ➢ Explain different techniques for improving the knowledge of matter.
Learning Outcome (Practical)	**After undergoing the subject, students will be able to:** • Determine the diameter and area of cross section of wire. • Measure thickness of glass plate. • Verify the law of parallelogram of forces • Determine the value of "g'' and student will can draw $L - T^2$ graph. • Calculate the Young's modulus of a steel wire. • Determine the specific gravity of solid. • Calculate the moment of inertia. • Determine unknown frequency of tuning fork.

Detailed Syllabus (Practical)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1	**PHYSICAL WORLD AND MEASUREMENT** 1.1 Mention the Scope and excitement of physics. 1.2 Describe relation between Physics and other knowledge of technological world. 1.3 Describe Principle of measurement. 1.4 Relate units of Fundamental and derived quantities. 1.5 Describe the errors of measuring instrument. 1.6 Describe Slide calipers, Screw gauge and Spherometer.	**2**	**2**
2	**VECTOR QUANTITIES** 2.1 Describe vector and scalar quantities. 2.2 Prove the various representations of the vector quantities; and representation of a vector by unit vector. 2.3 Explain the resultant of two vectors in different directions. 2.4 Resolve a vector into horizontal and vertical component. 2.5 Explain the dot and cross product of two vectors. 2.6 Define laws of triangle and parallelogram of Vector. 2.7 Solve the problems related with vector.	**3**	**8**
3	**MOTION AND EQUATIONS OF MOTION** 3.1 Define rest and motion. 3.2 Mention the Classification of motion. 3.3 Explain different motion. 3.4 Deduce equations of motion. 3.5 Explain the laws of falling bodies and mention the equation of motion of a body when it is projected vertically upwards or downwards. 3.6 Solve the problems related with Motion.	**3**	**5**
4	**CIRCULAR MOTION** 4.1 Define circular motion and projectile motion. 4.2 Deduce Equation of motion of a freely moving body thrown obliquely vertically upward or motion of a projectile. 4.3 Define angular velocity and linear velocity with their units. 4.4 Deduce the relation between angular velocity and linear velocity. 4.5 Define centripetal and centrifugal force with examples.	**5**	**8**

	4.6 Prove that centrifugal force $F = \frac{mv^2}{r}$. 4.7 Define moment of inertia, torque and angular momentum. 4.8 Deduce the relation between moment of inertia, angular momentum and angular velocity. 4.9 Deduce the relation between torque and angular acceleration. 4.10 Explain the law of conservation of angular momentum. 4.11 Solve the problems related with Circular Motion.		
5	**FORCE AND FRICTION** 5.1 Define force, constant force, Variable force, conservative and non-conservative force. 5.2 State Newton's law of motion and Prove that F=ma; from Newton's second law of motion. 5.3 Describe different units of force, unit correlation and dimension of force. 5.4 Derive the resultant of parallel forces. 5.5 State and prove the principles of conservation of momentum. 5.6 Describe friction. 5.7 Define the co-efficient of static friction. 5.8 Prove that the co-efficient of static friction is equal to the tangent of angle of repose. 5.9 Mention the merits and demerits of friction. 5.10 Solve the problems related with Force and Friction.	**3**	**8**
6	**GRAVITY AND GRAVITATION** 6.1 Explain the Kepler's law. 6.2 Define gravity and gravitation. 6.3 Explain Newton's law of gravitation. 6.4 Find out the relation between acceleration due to gravity (g) and gravitational constant(G). 6.5 State acceleration due to gravity 'g' with units and dimension. 6.6 Discuss the variation of 'g' at different places. 6.7 Define mass and weight. 6.8 Mention the units and dimension of mass and weight. 6.9 Describe escape velocity. 6.10 Solve the problems related with Force and Friction.	**3**	**8**
7	**SIMPLE HARMONIC MOTION** 7.1 Describe periodic and simple harmonic motion (SHM). 7.2 Mention the characteristics of SHM. 7.3 Describe a simple pendulum.	**3**	**5**

	7.4 Define effective length, amplitude, phase, complete oscillation, period of oscillation and frequency. 7.5 State the laws of simple pendulum. 7.6 Describe Motion of simple pendulum. 7.7 Deduce the differential equation of SHM. 7.8 Solve the problems related with SHM.		
8	**WORK, POWER AND ENERGY** 8.1 Define work, power, and energy. 8.2 State the units and dimensions of work, power and energy. 8.3 Prove the principle of conservation of energy for freely falling body. 8.4 Explain potential energy (PE) and kinetic energy (KE). 8.5 Derive work energy theorem. 8.6 Deduce the equation of potential and kinetic energy. 8.7 Recognize that the useful work can be found from: Efficiency= $\frac{\text{output work}}{\text{input work}} \times 100\%$ 8.8 Solve the problems related with work, power and energy.	**5**	**8**
9	**ELASTICITY** 9.1 Define Elasticity and elastic limit. 9.2 Define perfectly elastic body and perfectly rigid body. 9.3 Explain stress and strain. 9.4 Explain the hook's law. 9.5 Describe various kinds of modulus of elasticity. 9.6 Define and explain Poisson's ratio. 9.7 Prove that the potential energy per unit volume is equal to $\frac{1}{2}$ ×stress×strain. 9.8 Solve the problems related with elasticity.	**3**	**5**
10	**SURFACE TENSION AND VISCOSITY** 10.1 Describe cohesive and adhesive force. 10.2 Discuss the molecular theory of surface tension. 10.3 Define surface tension, surface energy and angle of contact. 10.4 Explain theory of capillarity. 10.5 Define viscosity and co-efficient of viscosity. 10.6 Mention necessity of viscosity. Solve the problems related with surface tension and viscosity.	**3**	**5**
11	**PRESSURE AND CHARACTERISTICS OF PRESSURE** 11.1 Discuss density and pressure as force per unit area and state that it is measured in $\mathrm{N/m^2}$ or pascal. 11.2 Mention characteristics of liquid pressure.	**2**	**3**

	11.3 Establish the pressure at a point in a fluid depend upon the density of the fluid, the depth in the fluid and acceleration due to gravity. 11.4 Solve the problems related with pressure.		
12	**WAVE** 12.1 Explain wave and wave motion. 12.2 Mention some definition of relating waves. 12.3 Describe the principle of super position. 12.4 Mention characteristics of progressive and stationary waves. 12.5 Derive the equation of progressive wave. 12.6 Define beats. 12.7 Describe the mathematical analysis of beats. 12.8 Solve the problems related with wave.	**3**	**8**
13	**SOUND AND VELOCITY OF SOUND** 13.1 Explain sound and production of sound. 13.2 Describe that sound can be produced of different frequencies and that the human ear has an audible frequency range covering approximately 20Hz to 20KHz. 13.3 State the approximately frequency for Infrasonic sound and Ultrasonic sound. 13.4 Describe the practical uses of echo sounding devices. 13.5 Explain resonance, free vibration and forced vibration. 13.6 Derive the equation for velocity of sound, $v = f\lambda$. 13.7 Explain intensity and intensity level of sound. 13.8 Mention the effects of pressure, temperature, and humidity on the velocity of sound in air. 13.9 Solve the problems related with sound.	**4**	**6**
14	**IDEAL GAS AND KINETIC THEORY OF GASES** 14.1 Define Ideal gas. 14.2 Describe the laws of gas. 14.3 Define absolute zero temperature 14.4 Define STP or NTP. 14.5 Describe fundamental postulates of gas molecules. 14.6 Explain the kinetic theory of gas molecules. 14.7 Prove that the ideal gas equation is $PV = nRT$ 14.8 Solve the problems related with theory of gases.	**3**	**8**
15	**HUMIDITY** 15.1 Explain Humidity, Absolute Humidity, Relative Humidity and Dew point. 15.2 Derive relation between vapor pressure and air pressure. 15.3 Determine humidity by wet and dry Bulb Hygrometer. 15.4 Explain few phenomena related to hygrometry. 15.5 Solve the problems related with humidity.	**3**	**3**
	Total	**48**	**90**

Detailed Syllabus (Practical)

Unit	Topics with Contents	Class (3 Period)	Marks (Continuous)
1	**Determine accurate diameter of an object using slide calipers.** 1.1 Collect sample of an object and slide calipers. 1.2 Check and set the slide calipers. 1.3 Measure small length of any object. 1.4 Measure diameter of any small cylinder. 1.5 Calculate the volume of any spherical body. 1.6 Maintain the record of performed Job.	1	3
2	**Measure the area of cross section of a wire by using screw gauge.** 2.1 Collect sample of a wire and screw gauge. 2.2 Check and set screw gauge. 2.3 Measure diameter of any narrow wire. 2.4 Calculate cross section of any object. 2.5 Maintain the record of performed Job.	1	2
3	**Determine the thickness of a glass plate by Spherometer.** 3.1 Collect sample of a glass plate and spherometer. 3.2 Check and set screw gauge. 3.3 Level the spherometer by adjusting screw. 3.4 Measure narrow thickness of any object. 3.5 Calculate radius of curvature of lens. 3.6 Maintain the record of performed Job.	1	3
4	**Verify the law of parallelogram of forces by a force board.** 4.1 Collect a force board. 4.2 Check and set a force board. 4.3 Observe and record the direction of resultant force. 4.4 Maintain the record of performed Job.	1	2
5	**Determine the co-efficient of static friction.** 5.1 Collect necessary tools and materials. 5.2 Check and set the equipment. 5.3 Select two experimental objects. 5.4 Set the object and weight each object by using horizontal table 5.5 Prevent excessive sliding of any things on a sloped surface. 5.6 Calculate the static friction by using formula 5.7 Maintain the record of performed Job.	1	3
6	**Determine the value of "g'' by using a simple pendulum and draw $L - T^2$ graph.**	3	2

	6.1 Collect necessary tools and materials. 6.2 Check and set a simple pendulum. 6.3 Measure the acceleration of gravity different places. 6.4 Measure the weight of any bodies by knowing the value of "g''. 6.5 Calculate the Time period of any oscillated body by knowing the value of "g''. 6.6 Maintain the record of performed Job.		
7	**Determine the Young's modulus of a steel wire by Searle's apparatus or by using Vernier method.** 7.1 Collect necessary tools and materials. 7.2 Check and set Searle's apparatus using Vernier method. 7.3 Measure length of a steel wire. 7.4 Set the test specimen of a steel wire into the Searle's apparatus. 7.5 Verify elastic properties of any body. 7.6 Maintain the record of performed Job.	**2**	**3**
8	**Determine the specific gravity of solid heavier than insoluble in water by Hydrostatic balance.** 8.1 Collect necessary tools and materials 8.2 Check and set Hydrostatic balance. 8.3 Set the test specimen in hydrostatic balance. 8.4 Measure the weight of a solid particle. 8.5 Measure the weight of a solid particle keeping under water. 8.6 Measure the temperature of water by thermometer. 8.7 Calculate specific gravity of solid. 8.8 Calculate specific gravity of solid repeatedly and calculate average value. 8.9 Check and justify the accuracy various type of solid by knowing value of specific gravity. 8.10 Maintain the record of performed Job.	**2**	**2**
9	**Determine the specific gravity of liquid by specific gravity bottle.** 9.1 Collect necessary tools and materials. 9.2 Measure the weight of empty bottle. 9.3 Measure the weight of bottle with water. 9.4 5Measure the weight of bottle with specimen liquid as same amount of water 9.5 Repeat the task of 8.6 three time. 9.6 Record the data in the table of above task. 9.7 Calculate the specific gravity of liquid 9.8 Maintain the record of performed Job.	**2**	**3**
10	**Determine Velocity of sound resonance method.** Collect necessary tools and materials. 10.1 Check and set resonance air column. Fill up pipe of resonance pipe of column by water.	**2**	**2**

	10.2 Strike the resonance device on a pad. 10.3 Measure the wave length of sound. 10.4 Repeat the task of 9.5 three time. 10.5 Record the data in the table of above task. 10.6 Calculate the frequency and velocity of sound 10.7 Maintain the record of performed Job.		
	Total	**16**	**25**

Necessary Resources (Tools, equipment's):

Sl	Item Name	Quantity
1	Slide calipers	15
2	Screw gauge	15
3	Spherometer	15
4	Simple pendulum	10
5	Searle, s apparatus	5
6	Hydrostatic balance	5
7	Fly wheel	5
8	Tuning fork	10

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
1.	Higher secondary physics (First part)	Dr. Shahjahan Tapan Ishak Nurunnabi Prof. Golam Hossain Pramanik	
2.	A Text Book of properties of matter	N Subrahmanyam and Brijlal	
3.	A Text Book of Sound	N Subrahmanyam and Brijlal	

Website References:

Sl	Web Link:	Remarks
1	www.Youtube.com	Search here

Subject Code	Subject Name	Period per Week		Credit
25921	Mathematics-II	T	P	C
		3	3	4

Rationale	To be able to understand the functions. To make understand the exponential series. To provide ability to apply the knowledge of differential Calculus in solving problem like slope gradient of a curve, velocity acceleration, rate of a flow of liquid etc. To enable to apply the process of integration in solving Practical Problems like Calculation of area of a regular figure in two dimensions and volume of regular solids of different shapes.
Learning Outcome (Theoretical)	To express partial fractions, understand geometric Express meaning of $\frac{dy}{dx}$ Develop differential of integral calculus. To understand vectors in Physics.
Learning Outcome (Practical)	**To able to solve problems related to limit, differentiation, integration and vector operations.**

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**ALGEBRA(Partial Fractions):** 1.1 Define proper and improper fractions. 1.2 Resolve into partial fraction of the following types: a) Denominator having a non-repeated linear factor. b) Denominator having a repeated linear factor. c) Denominator having a quadratic factor. d) Denominator having a combination of repeated, non-repeated and quadratic factors.	**3**	
2	**ALGEBRA (Exponential series):** 2.1 Define e. 2.2 Prove that e is finite and lies between 2 and 3. 2.3 Prove that $e^x = 1 + \frac{x}{L^1} + \frac{x^2}{L^2} + \frac{x^3}{L^3} + \frac{x^4}{L^4}$ ..... to ∞ 2.4 Solve problems of the followings types: i) $1 + \frac{1}{L^2} + \frac{1}{L^4} + \frac{1}{L^6}$ + ... to ∞ ii) $\frac{1}{L^2} + \frac{1+2}{L^3} + \frac{1+2+3}{L^4} + \frac{1+2+3+4}{L^5}$ + ... to ∞	**3**	
3	**ALGEBRA(Binomial theorem):** 3.1 State binomial expression. 3.2 Express the binomial theorem for positive, negative and fractional index. 3.3 Find the general term, middle term, equidistant term and term independent of x. 3.4 Solve the problems related to above.	**3**	

4	**DIFFERENTIAL CALCULAS (Functions and Graph of Functions):** 4.1 Define constant, variable, function, domain, range 4.2 Solve problems related to functions.	**3**	
5	**DIFFERENTIAL CALCULAS (Limit):** 5.1 Define limit and continuity of a function. 5.2 Distinguish between $\lim_{x \to a}$ f(x) and f(a). 5.3 Establish (i) $\lim_{x \to 0} \frac{\sin x}{x} = 1$ (ii) $\lim_{x \to 0} \frac{\tan x}{x} = 1$	**2**	
6	**DIFFERENTIAL CALCULAS (Differential co-efficient and differentiation):** 6.1 Prove that $\frac{dy}{dx} = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$ 6.2 Find the differential co-efficient of algebraic and trigonometrical functions from first principle.	**2**	
7	**DIFFERENTIAL CALCULAS (Apply the concept of differentiation):** 7.1 State the formulae for differentiation: (i) sum or difference (ii) product (iii) quotient (iv) function of function (v) logarithmic function 7.2 Find the differential co-efficient using the sum or difference formula, product formula and quotient formula. 7.3 Find the differential co-efficient function of function and logarithmic function.	**3**	
8	**DIFFERENTIAL CALCULAS (Geometrical meaning of $\frac{dy}{dx}$):** 8.1 Interpret $\frac{dy}{dx}$ geometrically. 8.2 Explain $\frac{dy}{dx}$ under different conditions. 8.3 Solve problems related to above.	**3**	
9	**DIFFERENTIAL CALCULAS (Use Leibnitz's theorem to solve the problems of successive differentiation):** 9.1 Find 2nd, 3rd and 4th derivatives of a function and hence find n-th derivatives. 9.2 Express Leibnitz's theorem. 9.3 Solve the problems of successive differentiation and Leibnitz's theorem.	**4**	
10	**DIFFERENTIAL CALCULAS (Partial differentiation):** 10.1 Define partial derivatives. 10.2 State formula for total differential. 10.3 State formulae for partial differentiation of implicit function and homogenous function. 10.4 State Euler's theorem on homogeneous function. 10.5 Solve the problems of partial derivatives.	**4**	

11	**INTEGRAL CALCULUS (Indefinite integrals):** 11.1 Explain the concept of integration and constant of integration. 11.2 State fundamental and standard integrals. 11.3 Write down formulae for: (i) Integration of algebraic sum. (ii) Integration of the product of a constant and a function. 11.4 Integrate by method of substitution, integrate by parts and by partial fractions. 11.5 Solve problems of indefinite integration.	**4**	
12	**INTEGRAL CALCULUS (Definite integrals):** 12.1 Explain definite integration. 12.2 Interpret geometrically the meaning of $\int_a^b f(x)\,dx$ 12.3 Solve problems of the following types: (i) $\int_0^{\pi/2} \cos^2 x\,dx$. (ii) $\int_0^1 \frac{(\sin^{-1}x)^2}{\sqrt{-x^2}}dx$	**4**	
13	**VECTOR(Vector algebra):** 13.1 Define scalar and vector. 13.2 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. 13.3 Prove the laws of vector algebra. 13.4 Resolve a vector in space along three mutually perpendicular directions. 13.5 Solve problems involving addition and subtraction of vectors.	**4**	
14	**VECTOR (Dot product of Vectors):** 14.1 Define dot product of Vectors. 14.2 Interpret dot product of vector geometrically. 14.3 Deduce the condition of parallelism and perpendicularity of two vectors. 14.4 Prove the distributive law of dot product of vector. 14.5 Explain the scalar triple product and vector triple product. 14.6 Solve problems involving dot product.	**4**	
15	**VECTOR (Cross product of vectors):** 15.1 Define cross product of vectors. 15.2 Interpret cross product of vector geometrically. 15.3 Deduce the condition of parallelism and perpendicularity of two vectors. 15.4 Prove the distributive law of cross product of vector. 15.5 Explain the scalar triple product and vector triple product. 15.6 Solve problems involving cross product.	**2**	
	Total	**48**	**90**

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous Marks
1	**Practical:** Solve problems related to following Topics: 1. Partial fractions 2. Exponential series	**16**	**25**

	3. Functions 4. Limits 5. Differential co-efficient of Differentiation 6. Geometrical meaning of $\frac{dy}{dx}$ 7. partial differentiation 8. Indefinite Integral 9. Definite Integral 10. Vector dot & cross product		
	Total	**16**	**25**

Necessary Resources (Tools, equipment's and Machinery):

Sl	Item Name	Quantity
01	**Scale**	**1 no**
02	**Geometric Box**	**1 no**

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
1.	Companian to basic Math's	G. V. Kumbhojkar	Phadke Prakashan
2.	Vector & Tensor Analysis	Murary R Spigel	Schaum's Outline Series
3.	Vector & Tensor Analysis	Md. Abu Yousuf	Mamun Brothers
4.	Co-ordinate Geometry & Vector Analysis	Rahman & Bhattacharjee	H.L. Bhattacharjee
5.	Higher Mathematics	Md. Nurul Islam	Akkhar Patra Prakashani
6.	Mathematics for Polytechnic Students	S. P Deshpande	Pune Vidyarthi Graha Prakashan
7.	Mathematics for Polytechnic Students (Volume I)	H. K. Das	S.Chand Prakashan
8.	Engg. Math's Vol I & II	Shri Shantinarayan	S.Chand & Comp
9.	Higher Mathematics	Dr. B M Ekramul Haque	Akshar Patra Prakashani
10.	Differential & Integral Calculus	Md. Abu Yousuf	Mamun Brothers
11.	Mathematics for Polytechnic Students (Volume I)	H. K. Das	S.Chand Prakashan
12.	Higher Mathematics	Ashim Kumar Saha	Akshar Patra Prakashani
13.	Higher Mathematics	S.U Ahamed & M A Jabbar	Alpha Prakashani

Website References:

Sl	Web Link: www.youtube.com	Remarks

Subject Code	Subject Name	Period/Week		Credit
26121	ARCHITECTURAL DESIGN-1	T	P	C
		2	6	4

Rationale	The subject will enable the diploma Architects students to improve architectural design education allows the student to gain different perspectives by enhancing his imagination and accumulation of knowledge. Concept and mind maps that are some of these methods guide students to think and explore. The student to establish an analysis–synthesis–evaluation relationship and improve his intellectual and visual perception abilities.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to:** ▪ Understand Architectural terminology. ▪ Familiar with Building components. ▪ Explain Plan, Elevation, Section. ▪ Explain Different circulations. ▪ Describe Design principals.
Learning Outcome (Practical)	**After undergoing the subject, students will be able to:** ▪ Draw Architectural Drawing. ▪ Draw Plan, Elevation, Section. ▪ Draw detail drawings. ▪ Design single room house. ▪ Draw Building component. ▪ Draw and Differentiate the Similar terms of building.

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1	**ARCHITECTURAL TERMINOLOGY** 1.1. State Plan, Elevation, Section. 1.2. Describe Single line and Double line diagram. 1.3. List the name of different drawing. 1.4. Explain Presentation drawing. 1.5. Explain Working drawing. 1.6. Explain Detail drawing. 1.7. Explain Shop and As-built drawing. 1.8. Describe Site.	4	8

2	**DIFFERENT BUILDING COMPONENTS** 2.1 Define Ground Level (G.L.), Plinth Level (P.L.) 2.2 Define the different Structural Terms: Sub structure, Super structure, Foundation, Footing, Column, Beam and Wall. Floor, Ceiling, False slab, False ceiling, Loft. Sill, Window sill, Lintel, Sunshade, Drip course. Roof, LC, Parapet, Cornice, Coping. Railing, Hand rail, Skirting, Dado. 2.3 Define the different building components: Opening, Door, Window. Ventilator, Sun Light (S.L.), Sky Light. Porch, Portico. Duct, Garbage duct, Air-well, Light-well. Penthouse, Tiles, Mosaic, Terrazzo, Offset, Punch, Groove line, pergola, verandah, balcony, terrace, corbel, louver, projection wall, vault, dome.	**10**	**20**
3	**PLAN** 3.1 Define Plan. 3.2 Describe the necessity of plan. 3.3 List the name of different Floor Plan: Ground Floor Plan, Typical Floor Plan, Basement Floor Plan, Semi Basement Floor Plan, Mezzanine Floor Plan, 3.4 Describe the different Roof plan -Flat roof, Slope/ Pitched roof, Curved roof. 3.5 State Lay-out Plan, Trench Plan, Site Plan, Master Plan.	**6**	**12**
4	**ELEVATION** 4.1 Define Elevation. 4.2 State the necessity of elevation. 4.3 Explain different Side (North, South, East, West) Elevation. 4.4 Explain Angular elevation. 4.5 Explain Special Type of elevation.	**2**	**4**
5	**SECTION** 5.1 Define Section. 5.2 State the necessity of section. 5.3 Explain different section (longitudinal/long, cross section. 5.4 Explain transverse section (section) 5.5 Explain partial section (part section) 5.6 Explain sectional elevation. 5.7 Explain floor height and room height.	**4**	**8**
6	**DESIGN PRINCIPALS IN ARCHITECTURE** 6.1 Define Art and Architecture. 6.2 Define design. 6.3 Describe necessity of design in Architecture. 6.4 Describe design principles in Architecture. 6.5 Define formal and informal design. 6.6 Define creative and technical design.	**2**	**4**
7	**DIFFERENT TYPES OF CIRCULATION** 7.1 List the types of circulation. 7.2 Vertical circulations (stair, escalator, ramp, elevator)	**2**	**4**

	7.3 Horizontal circulations (passage, corridor, lobby, foyer, lanais, deck, courtyard.)		
	Total	**30**	**60**

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous marks
1	**PERFORM ARCHITECTURAL DRAWING.** 1.1 Draw a single room plan by single line. 1.2 Draw a single room plan by double line showing door and Window. 1.3 Prepare a presentation drawing of the room. 1.4 Prepare a working drawing of the room with dimensions. 1.5 Draw four sides elevation of the room. 1.6 Draw a long section of the room with symbol and dimension. 1.7 Draw a cross section of the room with symbol and dimension.	**4**	**7**
2	**DRAWING OF PLAN** 2.1 Copy a Ground floor plan of a given small residential building. 2.2 Draw a Typical floor plan of the given building with dimensions. 2.3 Draw a Presentation plan of the building. 2.4 Draw a Roof plan of the building with dimensions.	**6**	**10**
3	**DRAWING OF ELEVATION** 3.1 Draw North elevation of the building. 3.2 Draw South elevation of the building. 3.3 Draw East elevation of the building. 3.4 Draw West elevation of the building. 3.5 Draw an elevation of any angular surface. 3.6 Draw an elevation of any curved surface.	**4**	**5**
4	**DRAWING OF SECTION** 4.1 Draw a longitudinal section of the building with detail Dimensions. 4.2 Draw a transverse section of the building with detail dimensions. 4.3 Draw a partial section of the building with detail dimensions. 4.4 Draw a sectional elevation of the building with detail dimensions.	**6**	**10**
5	**DRAWING OF BUILDING COMPONENT.** 5.1 Draw the sectional view of G.L. and P.L showing steps. 5.2 Draw the sectional view of parapet showing roof, cornice, coping. 5.3 Draw the sectional view of lintel with sunshade showing drip course. 5.4 Make a section of a false slab. 5.5 Draw a plan and elevation of a wall showing punch and offset.	**4**	**8**
6	**DRAW AND DIFFERENTIATE THE SIMILAR TERMS OF BUILDING.** 6.1 Draw a passage and a corridor from a given plan showing the difference between them. 6.2 Draw a lobby and a foyer from a given plan showing the	**6**	**10**

	difference between them. 6.3 Draw a lanai and a deck from a given plan showing the difference between them. 6.4 Draw a courtyard and a lightwell from a given plan showing the difference between them. 6.5 Draw verandah, balcony and terrace from a given plan showing the difference between them. 6.6 Draw a projection wall and a louver from a given plan showing the difference between them.		
	Total	**30**	**50**

Necessary Resources (Tools, equipment's and Machinery):

Sl.	Item Name	Quantity
01	Drawing sheet (Size A2)	6 Reams
02	Drafting Table/Board with Parallel bar	48 Nos
03	Set-Square	48 Set
04	Triangular Scale	48 Nos
05	Color Pencil	12 Dozens
06	Wooden Pencil (HB, B, 2B)	15 Dozens (5 dozens per grade)
07	Mechanical Sharpener	6 Nos
08	Eraser (soft)	4 Dozens
09	Paper Tape (3/4")	4 Dozens
10	Cloth Duster (18"x24")	48 pcs
11	Mechanical Lead Holder (0.5mm)	48 Nos
12	Lead (0.5mm-2B)	100 boxes (12 lead per box)

Recommended Books:

Sl	Book Name	Writer Name
01	Architecture Form, Space and Order	Francis D.K. Ching
02	Basic Architectural Design	Bert Bielefeild
03	The Language of Architecture	Andrea Simitch, Val Warke
04	Rethinking Basic Design in Architectural Education	Mine Ozkar
05	Basic Design Principals of Architectural	Parker, Leonard
06	Design Drawing	Francis D.K. Ching
07	Drafting & Design For Architecture & Construction	Donald E. Hepler, Dana J. Wallach, Paul Ross.

Website References:

Sl	Web Link	Remarks
01	https://www.oreilly.com/library/view/web-20-architectures	
02	https://subjectguides.uwaterloo.ca/architecture/reference	
03	https://www.britannica.com/topic/architectureposition.php#page-001	
04	https://pdfcoffee.com/how-t https://en.wikipedia.org/wiki/Architecture	

Subject Code	Subject Name	Period per Week		Credit
26411	CIVIL ENGINEERING MATERIALS	T	P	C
		2	3	3

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Rationale	Civil Engineering diploma holders have to supervise construction of various types of civil works involving use of various materials like stones, bricks, sand, cement, lime, tiles ,timber and wood based products, paints and varnishes, metals and other miscellaneous materials, The students should have requisite knowledge regarding characteristics, uses and availability of various building material and skills introducing tests to determine suitability at materials for various construction purposes. In addition, specifications of various materials should also be known (PWD/BNBC) for effective quality control.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to** • State different construction materials and their properties. • Interpret different type of stones. • Mention different types of bricks and Blocks. • Describe field and laboratory tests of stone, bricks, sand, and cement. • Illustrate different types of timber. • Discuss different type of defects of timber. • Explain paints/varnishes for various types of surfaces. • State and explain different types of Modern building materials such as ceramic, glass, metals and plastic, Tiles, Geo-Textile, Paint Insulating materials and chemical.
Learning Outcome (Practical)	**After undergoing the subject, students will be able to** 1. Identify the various types of stone. 2. Demonstrate laboratory test of stone. 3. Perform field test and laboratory test of Bricks. 4. Practice field test and laboratory test of Cement. 5. Observe field test and laboratory test of Sand. 6. Perform laboratory test of mild steel. 7. Identify the various types of wood and artificial wood.

DETAILED SYLLABUS (THEORY)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**CIVIL ENGINEERING MATERIALS** 1.1 Define civil engineering materials. 1.2 Classify civil engineering materials. 1.3 List the name of different engineering Materials.	1	02
2	**STONE** 2.1 Define stones. 2.2 Classify stones. 2.3 List the characteristics of good stones for construction. 2.4 Describe the dressing of stones. 2.5 Explain the field test and Laboratory test of Stone. 2.6 Mention the uses of stone in civil engineering filed.	4	09
3	**BRICK & HOLLOW BLOCK** 3.1 Define bricks. 3.2 Mention the raw materials of Bricks and properties of good bricks making earth. 3.3 Explain the manufacturing of bricks. 3.4 Discuss the Size of Brick as per BNBC & PWD specification. 3.5 Illustrate the field test of bricks. 3.6 Interpret Bricks Compressive strength, Water absorption, Efflorescence, Dimensional tolerance Test (as per BNBC). 3.7 List the characteristics of Hollow Block, Solid block& ceramic brick. 3.8 Mention the uses, Advantage and disadvantage of hollow block Solid block and ceramic brick. 3.9 Explain the procedure of manufacturing of Hollow Block, Solid block& ceramic brick.	4	09

4	**SAND** 4.1 Classify sand according to their sources. 4.2 Describe the field test and Laboratory Test of sand. 4.3 Mention the use of various grades of sand.	**2**	**05**
5	**CEMENT AND LIME** 1.1 Define cement and lime. 1.2 Mention the Raw materials of cement & functions of various ingredients of cement. 1.3 Draw the Flow diagram of manufacturing process of cement. 1.4 Mention the properties and uses of ordinary Portland cement and Portland composite Cement. 1.5 Explain the testing of cement as per BNBC: Strength of Cement, Fineness by sieving, Consistency, Soundness, Setting times. 1.6 State special cement. 1.7 List the uses of special cement. 1.8 Explain storage process of cement. 1.9 List the uses of Lime.	**4**	**09**
6	**TILES** 6.1 Define clay, concrete, Plastic, Mosaic, Marble, Glazed, Homogenous and Vitrified tile. 6.2 Explain the uses of different kinds of tiles. 6.3 Explain the field test of tiles.	**02**	**03**
7	**TIMBER & WOOD BASED PRODUCTS** 7.1 Classify Exogenous and Endogenous trees and cross section. 7.2 Explain Teak, Shikari, Mohegan, Gamari, Teak Chambal, Mango timber. 7.3 Mention the market forms of converted timber as per PWD. 7.4 State seasoning and method of seasoning of Timber. 7.5 Define wood-based products. 7.6 Describe manufacturing process and uses of plywood. 7.7 Explain the Veneers. 7.8 Mention the use of laminated board, block board, fiber board, MDF and HDF board, melamine board and gypsum board.	**03**	**05**

	7.9 Discuss the necessity of boards in false ceiling and Dry wall system.		
8	**GLASS** 8.1 Mention the constituents of glass. 8.2 Define Plate, weird, Tempered, colored, fiber, formed and float glass. 8.3 Point out the uses of Plate, weird, Tempered, colored, fiber, formed and float glass. 8.4 Describe the properties and uses of glass.	**03**	**03**
9	**PAINTS AND VARNISHES** 9.1 Mention the purpose and uses of paints. 9.2 Explain Distemper, plastic paint, enamels paint, cement paint, weather coat paint, and easy clean paint for outside of the building. 9.3 State the uses of Distemper, plastic paint, enamels paint, cement paint, weather coat paint, and easy clean paint for outside of the building. 9.4 Describe the properties and uses of varnish and polish. 9.5 Explain the properties and the uses of lacquers.	**02**	**02**
10	**METALS AND PLASTIC** 10.1 List the common types of iron used in Construction. 10.2 Mention the uses of wrought iron and cast iron. 10.3 Classify steel on the basis of carbon content. 10.4 State the uses of the Mild, alloy and stainless steel. 10.5 Describe light metal (aluminum/white metal) construction material. 10.6 Mention the uses of aluminum as construction materials. 10.7 Compare between plastic and laminating plastic. 10.8 Mention the characteristics of thermoplastic and thermosetting plastic. 10.9 Illustrate the uses of plastic and laminating plastic.	**03**	**05**
11	**INSULATING MATERIALS AND GEO-TEXTILES** 11.1 Define insulating materials. 11.2 Make a list of insulating materials. 11.3 Explain sound and thermal insulation. 11.4 Mention the uses of insulating Material. 11.5 Illustrate geo-textiles.	**02**	**04**

12	**CONSTRUCTION CHEMICALS & WATER PROOFING MATRIALS AND BITUMEN** 12.1 Describe Construction chemicals/Admixture, PC based chemical and bitumen. 12.2 List of construction chemicals. 12.3 Mention the uses of construction chemicals. 12.4 Define water proofing Materials. 12.5 list water proofing materials. 12.6 Point out the uses of water proofing materials. 12.7 Mention the advantage of PC based Chemical. 12.8 Illustrate the use of Bitumen.	**02**	**04**
	Total	**32**	**60**

DETAILED SYLLABUS (PRACTICAL)

Sl.	Experiment Name	Class (3 Period)	Marks (Continuous)
1	**CONDUCT FIELD TEST OF STONE** 1.1 Observe Color. 1.2 Observe Structure and Texture. 1.3 Determine Weight. 1.4 Determine Hardness. 1.5 Determine Toughness. 1.6 Observe Abrasion Resistance. 1.7 Maintain the record of performed task.	**1**	**2**
2	**CONDUCT LABORATORY TEST OF STONE** 2.1 Perform LA Test. 2.2 Perform Bard's test 2.3 Perform Acid Test 2.4 Perform Smith's Test 2.5 Perform Strength Test 2.6 Maintain the record of performed task.	**2**	**3**
3	**CONDUCT FIELD TEST OF BRICKS** 3.1 Identif 1st class, 2nd class, 3rd class bricks and jhama bricks 3.2 Determine Shape, Size and color. 3.3 Observe Soundness.	**2**	**3**

	3.4 Observe Hardness. 3.5 Maintain the record of performed task.		
4	**CONDUCT LABORATORY TEST OF BRICKS** 4.1 Perform Compression test 4.2 Perform Absorption test 4.3 Determine average weight of a brick. 4.4 Maintain the record of performed task.	**2**	**3**
5	**CONDUCT LABORATORY TEST OF CEMENT** 5.1 Make cement paste of Normal Consistency (CPNC). 5.2 Determine initial setting time. 5.3 Perform final setting time. 5.4 Perform compressive strength test. 5.5 Perform tensile strength test. 5.6 Perform fineness test. 5.8 Maintain the record of performed task.	**3**	**4**
6	**CONDUCT FIELD TEST OF CEMENT** 6.1 Observe Date of Manufacturing. 6.2 Observe Color. 6.3 Observe Temperature inside cement bag. 6.4 Observe Smoothness. 6.5 Observe Water Sinking 6.6 Observe smell of cement paste. 6.4 Maintain the record of performed.	**2**	**3**
7	**CONDUCT FIELD TEST OF SAND** 7.1 Observe Color. 7.2 Observe Texture. 7.3 Observe Salinity. 7.4 Observe Smoothness. 7.5 Maintain the record of performed	**1**	**1**
8	**PERFORM LABORATORY TEST OF SAND** 8.1 Create Bulking of sand. 8.2 Find FM of sand. 8.3 Determine Specific gravity of sand. 8.4 Maintain the record of performed task.	**1**	**2**

9	**PERFORM TEST OF MILD STEEL** 9.1 Perform Tensile strength Test. 9.2 Demonstrate Elongation Test. 9.3 Measure Diameter. 9.4 Perform Bend and Re-Bend Test. 9.5 Maintain the record of performed task.	**1**	**2**
10	**OBSERVE WOOD AND ARTIFICIAL WOOD** 10.1 Identify Veneers, Plywood. 10.2 Identify laminated board, Block board, Fiber board, Gypsum board**.** 7.3 Maintain the record of performed task.	**1**	**2**
	Total	**16**	**25**

NECESSARY RESOURCES (TOOLS, EQUIPMENT'S AND MACHINERY):

Sl	Item Name	Quantity
01	Oven	2 nos
02	Sieve set	5 nos
03	Balance	5 nos
05	Measuring Tape	5 nos
06	Hack Saw	5 nos
07	Chisel	5 nos
08	Trowel	5 nos
09	Bucket	5 nos
10	Pan	5 nos
11	Glass plate	5 nos
12	Stop Watch	5 nos
13	Cube Mould	5 nos
14	Vibrator	5 nos
15	Universal Testing Machine	2 nos
16	Fanel	10 nos
17	Brass	10 nos
18	Spatula	10 nos
19	Tensile strength testing machine for Cement	5 nos
20	Compressive Strength testing machine	5 nos
21	Los-Angeles Abrasion Test Machine	2 nos
22	Brick Cutting Machine	5 nos

23	Le Chatelier machine	5 nos
24	Vicates Apparatus	5 nos
25	Briquette Mould	5 nos
26	Sample Bricks (1^{st},2^{nd}, 3^{rd} etc)	5 nos for each class
27	Sample Sand	As per Requirment
28	Sample Tiles	As per Requirment
29	Sample Stone	As per Requirment
30	Sample Lime	As per Requirment
31	Sample Cement	As per Requirment
32	Wood Based Product (Ply wood,Veneers, Liminated Board, Partcal board etc.)	As per Requirment
33	Geo-Textiles	As per Requirment
34	Admixtures	As per Requirment

RECOMMENDED BOOKS:

Sl	Book Name	Writer Name	Publisher Name & Edition
01.	Engineering Materials	Gurcharan Singh	Delhi Standard Publisher Distributors.
02.	Engineering Materials	Sharma SK and Mathur	Delhi-jalandhar, s.Chand ans Co.
03.	A Text book of Engineering Materials	G.J.Kulkarni	
04.	Engineering Materials	Dr. M.A. Aziz	

WEBSITE REFERENCES:

Sl	Web Link	Remarks
01	www.youtube.com	Search here with topics
02	www.google.com	Search here with topics

Subject Code	Subject Name	Period Per Week		Credit
28511	COMPUTER OFFICE APPLICATION	T	P	C
		0	6	2

Rationale	**This is a generic course for all diploma programs required to enable the graduates to use and work with ICT competently. It includes typing in Bangla and English, using the internet for e-communication & e-interaction, operating a computer and allied devices, Operating Word Processing, Spreadsheet Analysis, and Presentation software. This course also enables a graduate to adopt further study in upper-level courses using IT and other sectors. This course is designed to emphasize practical aspects rather than theory.**
Course Learning Outcome	**After undergoing the subject, students will be able to:** • **type Bangla and English smoothly** • **use internet for e-communication & interaction** • **operate a computer and allied devices** • **perform the operation of Word Processing App, Spreadsheet Application, and Presentation Package.**

Detailed Syllabus (Practical)

CLO	Experiment name with the procedure	Class (3 Periods per class)	Marks
1	**TYPE TEXT AND DOCUMENTS IN ENGLISH AND BANGLA.** **1.1 Startup and Shutdown of a computer.** 1.1.1 Identify Basic ***Computer Hardware*** devices ***Computer Hardware*****:** System Unit, Motherboard, Processor, Power supply, SSD, Hard Disk, RAM, ROM 1.1.2 Check Peripherals and connect with the system unit. ***Peripherals*****:** Monitor, Keyboard, Mouse, Modem, Scanner, Printer, Multimedia Projector 1.1.3 Connect Power cords/adapter properly with computer and power outlets socket. 1.1.4 Switch on the Computer gently. 1.1.5 Arrange and customize PC ***Desktop / GUI settings*** as per requirement. ***Desktop / GUI settings***: Icons, Taskbar, View, Resolutions 1.1.6 Close Unsaved files and folders 1.1.7 Close Open software and switch off hardware devices. 1.1.8 Switch off Computer gently. 1.1.9 Switched off Power at the respective power outlets. **1.2 Install the Typing Tutor software.**	**3**	**5**

	1.2.1. Identify Required *Hardware* and *software* of typing Tutor software. ***Software****:* Operating System, Microsoft Office, Open Office, Typing Tutor, Bangla Typing Software, Google doc, Avro, Bijoy. 1.2.2. Install English and Bangla Typing tutor software. 1.2.3. Install Bangla Unicode Typing Tutor Software. 1.2.4. Install Required fonts for typing of Bangla and English. **1.3 Practice text Typing in English and Bangla.** 1.3.1 Start Typing tutor software. 1.3.2 Practice English Home key drilling systematically. 1.3.3 Practice Typing in English as per Standard procedure (30 WPM). 1.3.4 Install Specialized Bangla Typing tutor software. 1.3.5 Practice systematically Bangla Home key typing. 1.3.6 Type Bangla document as per standard procedure (20 WPM). 1.3.7 Type Text documents repeatedly to increase typing speed in both English and Bangla. **1.3 Maintain the record of the performed job.**		
2	**USE THE INTERNET FOR E-COMMUNICATION & INTERACTION** **2.1 Access resources from the internet** 2.1.1. Interpret ***Internet Terms*** and their uses. ***Internet Terms:*** Browser, web page, URL, HTML and http/https, E-mail, social media, IP, Download, Malware, Router, Bookmark, E-commerce 2.1.2. Select and install Appropriate ***internet browsers*** ***Internet browsers:*** Microsoft Edge, Google Chrome, Internet Explorer, Opera, Safari, QQ Browser, UC, Yandex 2.1.3. Carry out ***Browser Settings*** for smooth operation. ***Browser Settings:*** Synchronization, Privacy and Security, Auto fill, Appearance, Language, Download, Accessibility 2.1.4. Open the Internet browser and write/select a web address / URL in /from the address bar to access ***Information.*** ***Information:*** Text Information, Graphics, Video 2.1.5. Use ***Search engines*** to access information. ***Search engines:*** Google, Yahoo, Alta Vista, Msn, Bing 2.1.6. Use internet resources (Free and Paid Platform) 2.1.7. Share/download/upload Video / Information From/to web site/***social media.*** ***social media:*** Facebook, Twitter, LinkedIn, YouTube 2.1.8. Communicate using social media and professional's Media. 2.1.9. Search and follow Netiquette' (or web etiquette) Principles. **2.2 Use Web Services.**	**4**	**6**

	2.2.1. Identify ***Web Services*** and service provider as per job requirement. ***Web Services:*** Communication (Zoom, Bip, Meet), Storage (Drop box, Mega, One Drive, Google Drive) 2.2.2. Interpret the Function of the web services 2.2.3. List Information for creating an account in web Services. 2.2.4. Identify ***Google services***. ***Google services:*** Drive, Calendar, Map, Translator, Docs, Sheets, Slide, Forms, Search, Contact, Classroom, Image Search, Blogger, Meet 2.2.5. List Functions of Google services. 2.2.6. Demonstrate Google Services. **2.3 Use and manage E-mail.** 2.3.1 Identify and select ***E-mail services*** to create a new e-mail address. ***E-mail services:*** Free mail services (Gmail, Yahoo, Hotmail), Webmail Services 2.3.2 Compose E-mail and attach prepared document. 2.3.3 Send E-mail to different types of recipients using the CC and BCC option. 2.3.4 Read, forward, reply, and delete E-mail as per requirement. 2.3.5 Create and manipulate custom email folders. 2.3.6 Print E-mail message. **2.4 Maintain the record of the performed job.**		
3	**OPERATE A COMPUTER AND ALLIED DEVICES** **3.1 Perform Basic Setting** 3.1.1 Change power options properties as per requirement. 3.1.2 Terminate Non-responding application as specified. 3.1.3 Identify and adjust System information, operating system version, date & Time display system, color settings, and available RAM as per job requirement. 3.1.4 Set Keyboard Language according to the instructions. 3.1.5 Install Fonts following standard procedures. 3.1.6 Adjust Screen Resolution as per job requirement. 3.1.7 Identify Basic ***Hardware and Software problems*** and take the remedy. ***Hardware and Software problem***: Can't Open, Slow, Hang, Display Problem, Setting Problem, Keyboard and Mouse Problem, Sound Problem, Input devices are not working, No network, Slow internet, Printer is not working, Software installation problem **3.2Operate Computer** 3.2.1 Create Files and folders 3.2.2 ***Manipulate*** Files and folders as per requirement. ***Manipulated***: Opened, Copied, Renamed, Deleted, Sorted. 3.2.3 View and search Properties of files and folders. 3.2.4 Practice Control panel settings. 3.2.5 Format and defragment ***Storage devices*** as per requirement. ***Storage devices***: Hard drive, Flash Drive, Flash Memory 3.2.6 Take Backups as required. 3.2.7 use and change Password as per job requirement	**3**	**5**

	3.3 Manage Security of Hardware and Software. 3.3.1 Installed Custom software and Antivirus software according to standard operating procedure. 3.3.2 Scan Storage devices using antivirus software. 3.3.3 Scan Folders and Files using the current version of Software. 3.3.4 Update Scanning software or virus definition regularly. 3.3.5 Identify ***Cyber Security issues*** or hardware and software. ***Cyber Security issues***: Hacking, Phishing, Data Leakage, Threat 3.3.6 Recognize and avoid Cyber threats and attacks. **3.4 Manage Printer and Printer settings** 3.4.1 Install Printers on the computer according to the manufacturer's instructions. 3.4.2 Print Documents from an application. 3.4.3 Print, pause, restart, or cancel using print manager. **3.5 Maintain the record of performed job**		
4	**OPERATE WORD PROCESSING APPLICATION** **4.1 Create documents.** 4.1.1. Open ***Word-processing application.*** ***Word-processing application***: MS Word, Open Office 4.1.2. Create ***Documents.*** (Word documents, Standard CV with different text & Fonts, image, and table, Application / Official letter with proper paragraph and indenting, spacing, styles, illustrations, tables, header & footers and symbols, Standard report/newspaper items with column, footnote, and endnote drop cap, indexing and page numbering) 4.1.3. Add Text and Data according to information requirements. 4.1.4. Use Document templates as per the job required. 4.1.5. Use ***Formatting Tools*** when creating the document. ***Formatting Tools***: (Bold, Italic, Underline, Strikethrough, Subscript, Superscript, Change case, Text highlight color, Font color, Font, Font size, Clear formatting, Format painter, Illustrations and styles, Text, Table, Symbols, Header & footer, Text alignment) 4.1.6. Insert and edit Equation as per job requirement. 4.1.7. Save Documents are as per job requirements. **4.2 Customize basic settings to meet page layout conventions** 4.2.1 Adjust Page layout to meet information requirements 4.2.2 Open and use User interface and ***toolbars*** as per job requirement. ***Toolbars:*** File tab, Title bar, Ribbon, Ruler, Status bar, View button, Zoom control, Document area, Dialog box launcher, Backstage view 4.2.3 Change ***Font Format*** to suit the purpose of the document. ***Font Format:*** Times New Roman, Arial, Nikosh, NikoshBan, Kalpurush,	**8**	**16**

SutonnyMJ, Century, Century gothic, Vrinda

4.2.4 Change ***Alignment*** and line spacing according to document requirements.

Alignment: Left, Right, Center, Top, Text direction, Cell margins

4.2.5 Modify Margins to suit the purpose of the document.

4.3 Format documents

4.3.1 Use formatting features, Symbols, and styles as per requirement.

4.3.2 Highlight and Copy Text from other areas in the document or form another active document.

4.3.3 Insert headers and footers to incorporate necessary data.

4.3.4 Save Documents in another ***file format***

file format: .doc, .docx, .pdf, . xps , .xml

4.3.5 Save and close document to ***Storage device.***

Storage device: Flash Drive, Hard Disk Drive, Memory Card, CD/DVD

4.4 Create a table.

4.4.1 Insert the standard table into the document.

4.4.2 Split and /or merge the cells to meet the Information requirement.

4.4.3 Insert, delete, modify and move columns and rows if Necessary.

4.4.4 Insert Text into the table.

4.4.5 Operation carried for ***Data Handled*** as per job Requirement.

Data Handled: Sort, Repeat Header row, convert to Text, Formula, Autofit.

4.4.6 Use Styling tools according to style requirements.

4.4.7 Add formula to the table as per job requirement.

4.5 Add illustrations

4.5.1 Insert appropriate ***illustrations*** into the document and Customize if necessary.

Illustrations: Picture, clip art, Shapes, Smart Art, Chart

4.5.2 Position and resize images according to the Document formatting requirements.

4.6 Perform mail merge operation

4.6.1 Determine sender and recipients as per job Requirements.

4.6.2 Follow preparatory steps for mail merge.

4.6.3 Add recipients for mail merge.

4.6.4 Perform Mail merge operation.

4.6.5 Send mail.

4.7 Create references

4.7.1 Plan Footnote, endnote, and citation.

4.7.2 Create Footnote and endnote.

4.7.3 Create citation.

4.8 Print information

4.8.1 Connect ***printer*** with computer and power outlet Properly.

Printer: Dot matrix printer, Laser Printer, Inkjet printer

4.8.2 Switch on power at both the power outlet and

	printer. 4.8.3 Install and add printer. 4.8.4 Select correct printer settings and print the document or selected part as per job requirements. 4.8.5 View or cancel print from the printer spool. **4.9 Maintain the record of the performed job.**		
5	**OPERATE SPREADSHEET APPLICATION** **5.1 Create spreadsheets** 5.1.1. Open ***Spreadsheet Application***, 5.1.1. Create spreadsheet files and enter numbers, text, and symbols into cells according to information requirements. 5.1.2. Enter simple ***formulas and functions*** using cell Referencing where required. ***Formulas:*** SUM, AVERAGE, IF, MAX, MIN, COUNT, RANK, Date and Time, Math and Trig, AND, OR, NOR, Between, ABS, Greater than, less than ***Functions:*** Mathematics, Logical, Simple statistical 5.1.3. Correct formulas when error messages occur. 5.1.4. Use a range of common tools during spreadsheet development. 5.1.5. Edit columns and rows within the spreadsheet. 5.1.6. Use the auto-fill function to increment data where required. 5.1.7. Save spreadsheet file to directory or folder. **5.2. Customize basic settings:** 5.2.1. Adjust page layout to meet user requirements or special needs. 5.2.1. Open and view different toolbars. 5.2.2. Change font settings so that they are Appropriate for the purpose of the Document. 5.2.3. Change ***alignment*** options and line spacing according to spreadsheet formatting features. ***Alignment: Right, Left, Centre, Top, Middle, Bottom*** 5.2.4. ***Format*** cell to display different styles as required. ***Format:*** Bold, Italic, Underline, Font size, color, change case, Alignment, and intend 5.2.5. Modify margin sizes to suit the purpose of the spreadsheets. 5.2.6. View multiple spreadsheets concurrently. **5.3. Format spreadsheet:** 5.3.1. Use formatting features as per job requirements. 5.3.2. Copy selected formatting features from another cell in the spreadsheet or from another active spreadsheet. 5.3.3. Use formatting **tools** as required within the spreadsheet. 5.3.4. Align information in a selected cell as required. 5.3.5. Insert headers and footers using formatting features. 5.3.6. Save the spreadsheet in another format. 5.3.7. Save and close the spreadsheet to the storage device. **5.4. Sort and filter data in worksheet** 5.4.1. Create worksheets. 5.4.2. Insert data into the sheet. 5.4.3. Sort data with different criteria. 5.4.4. Filter data with different conditions, 5.4.5. Print sorted or filtered data **5.5. Incorporate object and chart in the spreadsheet:**	**6**	**10**

	5.5.1. Import an object into an active spreadsheet. 5.5.2. Manipulate imported objects by using formatting features. 5.5.3. Create a chart using selected data in the spreadsheet. 5.5.4. Display selected data in a different chart. 5.5.5. Modify chart using formatting features. **5.6. Create worksheets and charts** 5.6.1. Create Worksheets as pre-requirement. 5.6.2. Enter Data as per job requirement. 5.6.3. use function for calculating and editing logical operations. 5.6.4. Format ***Sheets*** as per requirement. ***Sheets:*** Salary Sheet with sorting, filtering, and chart, Mark/Grade/Tabulation sheets for simple result processing. 5.6.5. Create ***Charts and Graphs*** as per job requirements. ***Charts and Graphs:*** Column, Pie, Line, Bar, Table, Scatter 5.6.6. Preview and print Charts/ Sheets. **5.7. Print spreadsheet:** 5.7.1. View spreadsheet in print preview mode. 5.7.2. Select basic printer options. 5.7.3. Print spreadsheet or selected part of the spreadsheet. 5.7.4. Submit the spreadsheet to the appropriate person for approval or feedback. **5.8. Maintain the record of the performed job.**		
6	**OPERATE PRESENTATION PACKAGE:** **6.1. Create presentations:** 6.1.1 Open ***Application package*** for presentation and create a simple design for a presentation according to organizational requirements. ***Application package***: PowerPoint, Prezi 6.1.2 Open a blank presentation and add text and graphics using the user interface and toolbar. 6.1.3 Apply existing styles within a presentation. 6.1.4 Use presentation templates and slides to create a presentation. 6.1.5 Use various ***Illustrations,*** audio, video, and ***effects*** in the presentation. ***Illustrations***: Picture, Clip art, Photo, Shape, Smart art, Chart ***Effects***: Entrance, Emphasis, Exit, Motion path, Sound 6.1.6 Add design, transition, and animation as per job requirement 6.1.7 Save the presentation to the correct directory. **6.2 Customize basic settings:** 6.2.1 Adjust display to meet user requirements. 6.2.2 Open and view different ***toolbars*** to view options. 6.2.3 Ensure ***font settings*** are appropriate for the purpose of the presentation. 6.2.4 Select necessary font tools as per job requirements. 6.2.5 View multiple slides at once. **6.3 Format presentation** 6.3.1 Use and incorporate organizational charts, bulleted lists and modify as required. 6.3.2 Add and manipulate ***objects*** to meet presentation purposes. ***Objects***: image, chart, worksheet, equation, slide 6.3.3 Import and modify ***objects*** for presentation purposes. 6.3.4 Modify slide layout, including text and colors to meet presentation requirements. 6.3.5 Use ***formatting tools*** as required within the presentation. 6.3.6 Duplicate slides within and/or across a presentation. 6.3.7 Record the sequence of slides and/or delete slides for presentation purposes.	**4**	**8**

	6.3.8 Save the presentation in another ***format.*** 6.3.9 Save and close presentation to disk. **6.4 Add Slide show effects** 6.4.1 Incorporate animation and multimedia effects into the presentation as required to enhance the presentation and present the presentation. 6.4.2 Add ***Slide transition effect to*** ensure a smooth presentation. 6.4.3 Test the presentation for overall impact 6.4.4 Use on-screen navigation tools to start and stop slide shows or move between different slides. **6.5 Create a template using a master slide** 6.5.1 Open Blank presentation and click the slide master form view tab. 6.5.2 Create slide layout and/or customized as per requirements. 6.5.3 Add Theme based colors, fonts, effects, backgrounds and style to the presentation. 6.5.4 Set page orientation for all of the slides. 6.5.5 Save and close presentation **6.6 Print presentation and notes** 6.6.1 Select the appropriate print format to print presentation. 6.6.2 Select preferred slide orientation. 6.6.3 Add notes and slide numbers. 6.6.4 Preview slide and check spells before presentation. 6.6.5 Print selected slides. **6.7 Maintain the record of performed job.**		
	Total	**28**	**50**

Necessary Resources (Tools, equipment's and Machinery):

Sl	Item Name	Quantity
01	Computer System / Laptop	01 per student
	Accessories	
02	Extra Key Board	05 Piece
03	Extra Mouse	05 Piece
04	Extra System / Laptop Unit	02 Piece
05	Extra Mother Board	02 Piece
06	Extra RAM	05 Piece
07	Extra Hard Disk	02 Piece
08	Extra SSD	02 Piece
09	Multimedia Projector	01 Piece
10	Multimedia pointer	01 Piece
11	Potable wireless Sound System	01 set
12	Network Adapter	02 Piece
13	VGA cable	02 Piece
14	Printer (LASER)	01 Piece
15	Printer (Dot Matrix)	01 Piece
16	Printer (Inkjet)	01 Piece
17	Printer Cable	01 Piece
18	Monitor	01 Piece
19	Modem	01 Piece
20	Scanner	01 Piece

21	Power cords/Power adapter	01 Piece
22	UPS/ IPS	01 Piece

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	MOS 2010, Study Guide	Joan ambert, Joyce Cox	**Up-to-date Edition**
02	Computer Application in Business	R. Parameswaran	

Website References:

Sl	Web Link	Remarks
01	**https://teachers.tech/microsoft-office-tutorials/**	
02	**https://www.javatpoint.com/ms-word-tutorial**	
03	**https://www.tutorialspoint.com/word/index.htm**	