Department of Electronics and Telecommunication Engineering
Chittagong University of Engineering & Technology
Computer Programming and Numerical Analysis, CT 01

ID: Date:

No.		Marks

1.	For the following code snippet, what will be the value of the variables if it is run 3 times:
	
	`x = 5;`
	`--x;`
		1

2.	For the following code snipper, what will be the value of the variables if it is run 2 times:
	
	`x = 7;`
	`y = x++;`
		1

3.	For the following code snippet, what will be the value of the variables:
	
	`int a = 18, n = 2;`
	`a /= n+3;`
		1

4.	Suppose you are trying to buy bottle of cold drinks with sizes ranging from 250mL to 2.25L and prices from 20/- to 150/- BDT. Write an *if* statement to choose a drink with size greater than 500mL and price lower than or equal to 100/- BDT.	1

5.	Write if the following statements are True or False:
	
	`-5 >= -1`
	
	`0 <= 0`
		1

6.	What will be the output of the following statements:
	
	`-14 % 3`
	
	`5.0 % 2.0`
		1

7.	For a 16-bit machine, what will be maximum possible value of a of a signed and unsigned integer?	1

8.	Write whether the following statements are valid or not. Mention the reason of invalidity as well:
	
	`#Define ARRAY 11`
	
	`#define X = 5`
		1

9.	What will be the value of the variables for the following code snippet:
	
	`int a, b;`
	`char s;`
	`scanf("%d %c %d", &a, &b, &s);`
		1

10.	Write whether the following variables names are valid of not. Mention the reason of invalidity as well:
	
	`first name`
	
	`int_type`
	
	`5_floor`
		1

11. Write the jobs the following backslash characters: 1

\n

\t

12. What is the difference between the following two: 1

5 + 3

"5 + 3"

13. Write whether the following constant are valid or not. Mention the reason of invalidity as well: 1

1.5e+2.5

0X7F

14. Write whether the following are keywords of not: 1

constant

short

15. Write the name of the following characters: 1

_

&

^

16. Correct the following program: 5

```
#Include<stdio>
int main( {
  int a, b, c, float;
  printf(Enter the values:\n", a);
  scanf(%f %f %f, a, b, c)
  float = a + b + d
  printf(The result is %f %f", &float);
})
```

Free Space

Computer Programming and Numerical Analysis, CT 2

No.		Marks
1.	Evaluate the following expression showing all evaluation steps: **54*6(12/2)-7+(3*3)**	4
2.	Show the detailed type conversion for the following code snippet: **double x,d;** **int f;** **float i;** **long int 1;** **x = 1/i – i*f + d**	4
3.	Write a C program to find the biggest number between three numbers. Use print and scan as necessary.	6
4.	For following string: ETE DECAHERTZ 2022 Print the string for the following specifications: %s, %20s, %20.10s, %.5s, %-20.10s, %5s	4
5.	Write a C program to take username and age as input in the same scanf function.	2

Department of Electronics and Telecommunication Engineering

Course No. CSE 181

CT 03 Time: 20 minutes Marks: 20

1. Why do we need an array? How 1D array can be initialized? Explain. **08**
2. Write a C/C++ program to find the count frequency of a particular searching element in a 1D array. **12**

CT# 03 **ETE 101** **20 batch** **Marks: 20** **Time: 15 min**

Q.1 Common collector configuration is primarily used for what purposes and why? 05

Q.2 Graphically explain the relationship between current gain and amplification factor. 09

Q.3 Write the values of V_{CE} and I_C for three operating regions of BJT 06

Department of Mathematics

CT-1, Math 185

Time: 20 Minutes

Marks: 20

1. Evaluate: i) $L\{t^2 sinhat\}$, ii) $L\{4e^{5t} + 6t^3 - 4cos3t + 3sin4t\}$, iii) $L\{e^{at} cosbt\}$ 12

2. Find the Laplace transform of *F(t)*, where $F(t) = \begin{cases} \cos\left(t - \frac{2\pi}{3}\right), & t > \frac{2\pi}{3} \\ 0\ , & t < \frac{2\pi}{3} \end{cases}$ 08

Department of Mathematics

CT-2, Math185

Time: 20 Min.

Marks: 20

Q. Evaluate the following: i) $L^{-1}\left\{\frac{1}{s^2(s-a)}\right\}$, ii) $L^{-1}\left\{\frac{s-1}{s(s+1)}\right\}$, iii) $L^{-1}\left\{\frac{1}{(s+\sqrt{2})(s-\sqrt{3})}\right\}$

Department of Electronics & Telecommunication Engineering

EEE183

Time: 18mins **CT#01** **Marks: 20**

1. Differentiate between simplex lap winding and simplex wave winding of a d.c machine. **6**
2. A d.c.generator has 64 commutator segments & its pole number is 10. Find out its pole pitch and whether it is full pitched coil or fractional pitched coil and why? **6**
3. A full pitched dc generator has pole pitch 6 slots per pole. Find out the coil pitch. **3**
4. Distinguish between full pitched coil and fractional pitched coil. **5**

Department of Electronics & Telecommunication Engineering

EEE183

Time: 15mins **CT#02** **Marks: 20**

1. A shunt generator delivers 190A at a terminal p.d. of 250V. The armature resistance and shunt field resistance are 0.03Ω and 60Ω respectively. The iron and frictional losses are 900W. Find (i) e.m.f. generated; (ii) Cu losses; (iii) output of the prime mover; (iv) mechanical, electrical and commercial efficiency.

Department of Electronics & Telecommunication Engineering

EEE183

Time: 18mins **CT#03** **Marks: 20**

1. Which types of d.c. motors are used for the following applications:
   i) Presses, ii) Shapers, iii) Drills, iv) Elevators, v) Shears, vi) Lathes. **6**
2. Write down the conditions of an ideal transformer. **6**
3. Find the useful flux per pole on no-load of 250 V, 6-pole shunt motor having a wave-connected armature winding with 110 turns. The armature resistance is 0.2 Ω. The armature current is 13.3 A at the no-load speed of 908 r.p.m. **8**

No.		Marks
1.	Draw and explain the phasor diagram for a practical transformer on inductive load with winding resistance and leakage reactance.	12
2.	A $30KVA, 2400/120 - V, 50Hz$ transformer has a high voltage winding resistance of 0.1Ω and a leakage reactance of 0.22Ω. The low voltage winding resistance is 0.035Ω and the leakage reactance is 0.012Ω. Find the equivalent winding resistance, reactance and impedance referred to the high voltage side.	8

Department of Electrical & Telecommunication Engineering

Course No. Phy- 181. **Session: 2020-2021**

Time-20 Min **Total Marks-20**

01. What is the basic difference between Schottky and Frenkel defect? 06
02. What is Fermi level for a semiconductor? Explain how it shifts for different types of extrinsic semiconductor? 06
03. Define packing fraction? Find out the packing fraction for FCC lattice. 08

Department of Electrical and Electronic Engineering

Course No. Phy- 181. **Session: 2020-2021**

Time-20 Min **Total Marks-20**

01. Explain Quarter wave plate and Half wave plate 06
02. Proof that light is a transverse wave. Write down the methods name to polarize a light. 07
03. Draw the intensity distribution for the single slit Fraunhofer diffraction pattern. 03
04. How many orders will be visible if the wavelength of the incident radiation be 5000 a.u. and the number of lines on the grating be 14000 an inch? 04

Department of Electronics and Telecommunication Engineering

Chittagong University of Engineering & Technology

Course Title: Engineering Physics, Course Code: Phy-181

Class Test-2

Time: 20 Mins Marks: 20

1.What is Compton effect? Illustrate the theory of Compton Scattering and deduce an expression for the Compton Shift. 20

Department of Electronics and Telecommunication Engineering

Chittagong University of Engineering & Technology

Course Title: Engineering Physics, Course Code: Phy-181

Class Test-1

Time: 20 Mins Marks: 20

1. Derive the equations of Lorentz's transformations. Hence show that the time is dilated in a moving frame of reference.

Department of Electrical and Electronic Engineering

Course No. Phy- 181. **Session: 2020-2021**

Time-20 Min **Total Marks-20**

01. What do you mean by aberration and classify it 04
02. Show that the deviation produced by a lens is independent of the position of the object. 05
03. How the energy conservation law is maintained in the case of interference and also show it graphically. 05
04. A thin converging lens and a thin diverging lens are placed coaxially in air at a distance of 5 cm, If the focal length of each lens is 10cm, find for the combination (a)the focal length and (b) position of the principal points. 06

Department of Electronics and Telecommunication Engineering

Chittagong University of Engineering & Technology

Level-1, Term-2 Session 2020-21

Course: Physics Sessional, Code: Phy-182

Sessional Quiz

Time: 25 mins Marks: 22.5

1. Why is the frequency of the string in longitudinal vibration becomes half the frequency of the tuning fork? – Explain. 2.5
2. A grating containing 5500 slits per centimeter is illuminated with a monochromatic light and produces the second-order bright line at a 33° angle. What is the wavelength of the light used? 2.5
3. Does the stopping voltage depend on the frequency of incident light? – Explain. 2.5
4. Draw a sequential diagram to illustrate the function of a polarimeter. 2.5
5. How are the coherent sources produced in the Newton's rings experiment? – Explain. 2.5
6. Why did you use sine wave from the function generator to determine the line frequency? 2.5
7. What is radiation correction? How did you ensure it in your experiment? 2.5
8. If the thickness of the compound pendulum is doubled keeping all others unchanged, how will your findings be changed in the experiment? 2.5
9. Why is the determination of effective mass of the spring important for finding the spring constant/rigidity modulus? 2.5