Mid-Term Examination 2022/02

B.Sc. Engineering in Computer Science Program

EEE 1201 : Introduction to Electrical Engineering

Marks: 20 **Time: 1.50 Hour**

[The figures in the right margin indicate full marks for the respective question]

[Answer any *TWO* sets from the following questions]

1. a. What is power? 2
   b. State Ohm's Law and Thevenin's Theorem. 3
   c. For the bridge network in Fig. 1, find R_{a-b} and i. 5

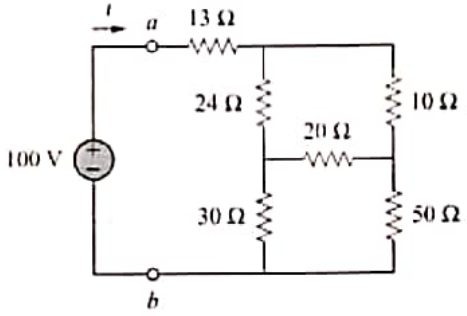

Fig. 1

2. a. What is voltage? 2
   b. State KCL and KVL. 3
   c. Find the currents and voltages in the circuit shown in Fig. 2. 5

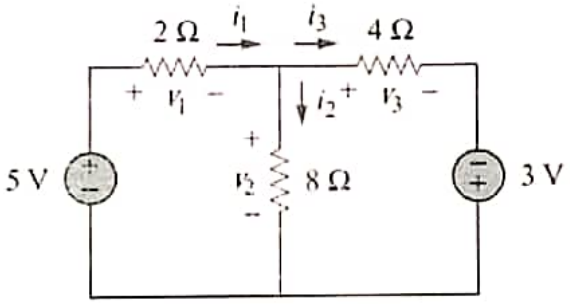

Fig. 2

3. a. What is current? 2
   b. Define Node, Mesh, Super-node, and Super-mesh. 3
   c. Calculate the mesh currents i1 and i2 in the circuit of Fig. 3. 5

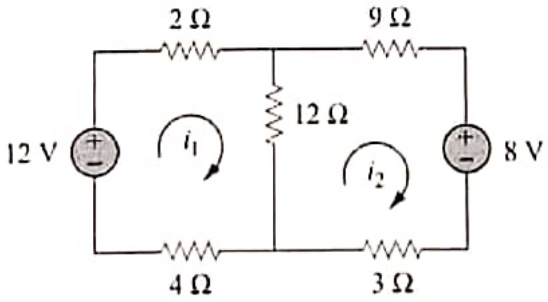

Fig. 3

Department of ENGLISH

1st Year 2nd Semester Midterm Examination 2022-02

Course Code: GED 03

Course Title: Advanced Reading and Writing

Full Marks: 20 **Time: 1 Hour & 30 Minutes**

Read the following passage carefully and answer the questions below (1 & 2):

Most men long for wealth. Wealth, they think, brings happiness. But, often, wealth brings a great deal of worry without much happiness. A millionaire is a very wealthy man, of course, but his great wealth is also a great responsibility. He may have many large estates and factories. Estates and factories usually need a lot of attention. There is may be disputes between the millionaire and his workers over one trouble and another. These disputes may lead to strike. In this case the millionaire may be lose a lot of money. Or some gangster may kidnap the millionaire's child and demand thousands of pounds to return the child safe and sound. A very rich man, therefore, in spite of his great wealth, may not have an easy life. He has many worries. These worries may be greater than the worries of a poor man.

1. **Identify the following sentences are true or false. If false state the correct sentence.** **01×05 = 05**

   a) Happiness always comes from wealth.
   b) A millionaire wealth is often a great responsibility.
   c) He has to employ workers in his estates and factories.
   d) A millionaire may have less worries than a poor man.
   e) Workers often go on reconciliation.

2. **Create new meaningful sentences with the given words. (Any five)** **01×05 = 05**

   i. Wealthy, ii. Responsibility, iii. Dispute, iv. Estate,
   v. Worry, vi. Happiness, vii. Gangster.

3. **Generalize an application to the General Manager of Green Life Corporation, Dhaka for the post of Assistant Manager with CV.** **01×10 = 10**

Mid-Term Examination 2022/02

B.Sc. Engineering in Computer Science Program

CSE 1201: Discrete Mathematics

Marks: 20 **Time: 1.30 Hour**

[The figures in the right margin indicate full marks for the respective question.]

[Answer any *TWO* sets rest of the following questions.

1. a) Briefly explain about contrapositive, disjunction 2
   b) i) Let W (x, y, z) denote the statement "x + 2 <= z - y". What are the truth values of the propositions L (1, 8, -3) and L (-10, 12, 2)? 2
   ii) Let J (x, y) denote the statement "y >= X * 3". What are the truth values of the propositions G (12, 11) and G (17, 10)?
   c) What is implication? Write down the necessary rules for implication. 3
   d) What is biconditional proposition? Write down the necessary rules for biconditional proposition. 3

2. a) Briefly explain De-Morgan's law with example. 2
   b) How can the following sentence be translated into a logical expression? 2
   i) "You can access the Internet from Rabindra Maitree University campus only if you are a Computer Science major not a freshman". q if p
   ii) "The automated reply cannot be sent when the file system is full". q when p
   c) Define the following terms: 4
   i) Inverse ii) Converse iii) Conjunction iv) Contradiction.
   d) Prove that $(p \wedge q) \longrightarrow (p \vee q)$ is tautology. 2

3. a) Define the following terms: i) Theorem ii) Proof iii) Logical connectives. 3
   b) What is logical equivalence? Show that i) $(p \vee q)$ and $(p' \wedge q')$ ii) $(p \longrightarrow q)$ and $(p' \vee q)$ are logical equivalence. 3
   c) Briefly explain about universal and existential quantifier. 4

Midterm Examination- 2022/02
Department of CSE
MATH 1201: Integral Calculus, Ordinary and Partial Differential Equations, and Series Solutions

Marks: 20 Time: 01:30 hours

[The numbers in the right margin indicate full marks for the respective question]

*[Answer any **Two** of the following questions]*

01. Find the integrals below:

a) $\int \cos^4 x \sin x \, dx$ 2

b) $\int \tan^{-1} x \, dx$ 3

c) $\int \frac{2x^2 - 1}{(1+x)^2(x-2)} dx$ 5

02. a) Evaluate the following definite integral: 5

$$\int_0^{\pi/2} \frac{x}{\cos x + \sin x} dx$$

b) Evaluate $\int_a^b \sin x \, dx$ by first principal / definition. 5

03. a) Derive the reduction formula for 4

$$\int \cos^n x \, dx$$

b) Derive the reduction formula and hence find 6

$$\int_0^{\pi} \cos^3 x \cos 2x \, dx$$

MID TERM EXAMINATION (Fall) - 2022

CSE, 1st Year 2nd Semester

Course Title – physics, Course code : PHY-1201

Time : 1 Hour and 30 minutes

Full Marks -20

(Answer any two (2) of the following questions)

Marks

1. Show That the total energy of a particle executing simple harmonic motion is proportional to the square of the amplitude of the motion. i.e $E \propto A^2$ 10
2. Describe the construction of conductors and insulators with requisite diagram. 10
3. Determine the electric field due to an electric dipole with proper picture. 10
4. Describe the valence bond and conduction band in a semiconductor with diagram. 10

Mid-Term Examination 2022/02

B.Sc Engineering in Computer Science Program

CSE 1202: Object Oriented Programming using C++

Marks: 20 **Time: 1.30 Hour**

[The figures in the right margin indicate full marks for the respective question.]

[Answer any **TWO** sets rest of the following questions]

1. a) Define Object Oriented Programming with example. 2
   b) Describe basic concepts in OOP. 6
   c) Write the advantages of OOP over procedure oriented programming languages. 2

2. a) Define Inheritance in C++. 2
   b) Write the differences between constructor and destructor. 2
   c) Describe the different types of inheritance in C++. 6

3. a) Write the differences between function overloading and function overriding. 2
   b) Describe abstract class with example. 4
   c) Write a C++ program that operates a pure virtual function. 4