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Begum Rokeya University, Rangpur
Department of Computer Science and Engineering
B.Sc (Engg.) 1st Year 1st Semester Final Examination-2019 (Session: 2018-19)

Course Title: Computer Fundamentals
Course Code:CSE1101

Total Marks: 50
Time: 3 Hours

Note: i) Answer any FIVE questions from the following questions
ii) Numbers in the right margin indicate marks for each question.

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1. (a) What is a number system? Briefly explain 2's complement number representation of signed number. Why this representation is used to represent signed number? Find the 2's complement of the following 8-bit number 10101011. 5
   (b) How do *computer's system clock* and *cache memory* affect the processing speed of a computer? 2
   (c) Briefly discuss the process of creating, compiling, and running a C program from the Linux terminal. 3

2. (a) What is a computer network? Five of your friends are planning to setup a computer network among five computers to play games over the network. What are the networking technologies, structures and configurations they can use to setup the network and how? 2
   (b) Define the following terms: *IP Address, MAC Address, Network Switch, Client-server Network, and Hyper Text Markup Language (HTML)* 3
   (c) Write a C program to read a text file one character at a time and print the number of words, lines, and non-digit characters in that file. 5

3. (a) What is Swap space in Linux operating system (OS)? Explain and compare the following terms: Graphical User Interface (GUI) and Command Line Interface (CLI). 5
   (b) What is *OS Kernel* ?Briefly explain the following UNIX commands: `ls, cd, cp, mkdir` 5

4. (a) Distinguish among **LCD, LED** and **Plasma** display technologies. 3
   (b) Write a function **isPowerofTwo(n)** that returns 1 if n is a power of two (i.e n = 2^x), 0 otherwise. Use bit manipulation for full marks. 3
   (c) What is URL? Show the syntax of URL with example. 1
   (d) What is Internet? What are the services provided by the Internet? Explain Each of them briefly. 3

5. (a) What is a flowchart? Draw a flowchart to find the number of 1s in the binary representation of an integer number. 3
   (b) What is an IDE? What is the difference between a compiler and an interpreter 3
   (c) A factorial function is define as , which is the number of possible ways to arrange different n objects. Write a C program that calculates (For full marks, avoid memory overflow during computation) 4

6. (a) What is software and Program? Mention some names of popular package programs. What is software piracy? 3
   (b) Write a C function named "exFunction" that: 5
   -Reads in a sentence given by the user
   - Scrambles this sentence, with each word replaced by its reverse
   -Prints the scrambled sentence
   -Returns the scrambled sentence
   For example, the sentence : **This is a test** would be scrambled to: **sihT si a tset**
   (c) What is a device driver program? 2

7. (a) How can we take all data types as input using scanner? Write the code segment. 3
   (b) Explain the difference between while and do-while loops with respect to the minimum number of times the body of the loop is executed. 3
   (c) (i) Find error: 4

```
while(count !=10);
      { count =1;
    sum= sum+x;
    count = count +1;}
```

(ii) Show output:

```
int n=0,m=1;
    for (m=1; m<=n+1; m++)
        printf("%d",m);
```

Department of Computer Science and Engineering

Begum Rokeya University, Rangpur

B. Sc. (Engineering) 1st Year 1st Semester Final Examination-2019

Session: 2018-19

Course: Technical English (CSE 1121)

Time: 3 hours **Full marks: 50**

1. Read the following text and answer the questions below: 5x1=5

Unlike many modern stories for children, fairy tales present evil as being no less omnipresent than virtue. In practically every fairy tale, both good and evil are given body in the form of figures and their actions, as both good and evil are omnipresent in life and the propensities for both are present in every man. This duality poses the moral problem and requires the struggle to solve it. Evil is not without its attractions-symbolized by the might of the giant or dragon, the power of the witch, the cunning of the queen in 'Snow White –and often it is temporarily in the ascendancy. In many fairy tales, a usurper succeeds for a time in seizing the place rightfully belongs to the hero- as the wicked stepsisters do in 'Cindrella'. It is the place rightfully belongs to the hero-as the wicked stepsisters do in 'Cindrella'. It is not so much that the evildoer is punished at the story's end, which makes immersing oneself in fairy tales an experience in moral education, although this is part of it. In fairy tales, as in life, punishment or fear of it is a limited warning to crime. The conviction that crime does not pay is much more effective as a deterrent, and in fairy tales the bad person always loses out. However, it not even the fact that virtue wins in the end that promotes morality but that the hero is the most attractive figure to the child , who thus identifies with the hero in all his struggles and triumphs with him when virtue is victories. The child makes such identifications on his own and the inner and outer struggle of the hero imprint morality on him.

a. What do fairy tales present?
b. What purpose does 'duality' serve in a fairy tale?
c. Do you agree that evil has got its attractions? Give examples from the given passage.
d. Who is the most attractive person of a fairy tale and why?
e. What is the main idea of the passage?

2. Give synonyms of the following words: 1x5=5

   Ally, Blank, Chaos, Dangerous, Predict

3. Give antonyms of the following words: 1x5=5

   Active, Barbaric, Common, Legal, Safe

4. Make these words negative by adding a prefix.Use these negative words in sentences: 1x10
   comfortable, fortune, believe, correct, tidy, natural, interesting, continue, politely, appear

5. Change the structure of the sentences as directed: 1x5=5

   a. He ran fast but could not get the train. (Complex)

   b. Killing the bird, the old man brought bad luck to the crew. (Compound)

   c. Shakespeare is one of the greatest dramatists in the world. (Positive)

   d. Chittagong is the biggest port in Bangladesh. (Comparative)

   e. Whom did you meet yesterday? (Passive)

6. Write a paragraph on "Impact of social media on young generation". 10

7. Write an application to Head of your department requesting him/her to arrange a seminar on importance of computer literacy in 21st century. 10

   Or,

   Write a letter to your friend sharing him/her about your future plan as a student of Computer Science Engineering Department.

Begum Rokeya University, Rangpur

Department of Computer Science and Engineering

B.Sc.(Engg.) 1st year 1st Semester Final Examination, 2019. (Session: 2018-19)

Course Code: MATH 1123 Time: **3.00 Hours**

Course Title: **Algebra, Trigonometry and Vectors** Total Marks: **50**

*[N B: **Answer all of the following questions and figures in the right margin indicate full marks**]*

1. a) State and prove De Morgan's laws. 5

   b) Among 120 students at a college, 40 take mathematics, 40 take English and 15 take both mathematics and English. Find the number of student who :

   i) take mathematics or English
   ii) take exactly one of the two subjects
   iii) take mathematics but not English.
   iv) take neither mathematics nor English.
   v) do not take mathematics.

2. a) Define symmetric and anti-symmetric relation with example. Let W={1, 2, 3, 4} and R={(1,2), (3,4), (2,2), (3,3), (2,1) }. Is R anti-symmetric? 5

   b) Each of the following open sentences defines a relation R in the natural numbers N. State whether or not each relation is transitive. 5

   (i) " x is less than or equal to y " (ii) "x divides y" (iii) "x+y=10" (iv) "x+2y=5"

3. a) Prove that α is a root of the equation $f(x)=0$ if and only if the polynomial $f(x)$ is divisible by $(x-\alpha)$ 5

   b) Apply Descarte's rule of Sign to find the nature of the roots of $x^7-2x^5+7x^4+x^3-9=0$. 5

4. a) Prove by the method of induction that $(\cos\theta_1+i\sin\theta_1)(\cos\theta_2+i\sin\theta_2)\ldots(\cos\theta_n+i\sin\theta_n)=\cos(\theta_1+\theta_2+\ldots+\theta_n)+i\sin(\theta_1+\theta_2+\ldots+\theta_n)$. 5

   b) Slove the equation in the help of De Moivre's theorem

   $$x^9+x^5-x^4-1=0.$$

5. a) Find the sum of the series to n terms $1.2.3+2.3.5+3.4.7+\ldots$ 5

   c) Show that the system of n.Linear equation

$$\begin{array}{llll} a_{11}x_1+a_{12}x_1+\cdots & +a_{1n}x_n & = b_1 \\ a_{21}x_2+a_{22}x_2+\cdots & +a_{2n}x_n & = b_2 \\ \cdots\cdots\cdots\cdots\cdots\cdots\cdots & \cdots\cdots\cdots & \cdots\cdots \\ a_{n1}x_1+a_{n2}x_2+\cdots & +a_{nn}x_n & = b_n \end{array}$$

   Has a unique solution

$$x_1=\frac{D_1}{D}, x_2=\frac{D_2}{D}, \ldots x_n=\frac{D_n}{D} \text{ where}$$

$$D=\begin{vmatrix} a_{11} & a_{12}\ldots & a_{1n} \\ a_{21} & a_{22}\ldots & a_{2n} \\ & \vdots & \vdots \\ a_{n1} & a_{n2}\ldots & a_{nn} \end{vmatrix} \neq 0$$

6. a) Determine whether the vectors $\bar{A}=\hat{\imath}-3\hat{\jmath}+2\hat{k}$, $\bar{B}=2\hat{\imath}-4\hat{\jmath}-\hat{k}$ and $\bar{C}=3\hat{\imath}+2\hat{\jmath}-\hat{k}$ are linearly dependent or independent. 5×1

   b) Find a unit vector Perpendicular to both $\bar{A}=4\hat{\imath}-\hat{\jmath}+3\hat{k}$ and $\bar{B}=-2\hat{\imath}+\hat{\jmath}-2\hat{k}$ 5

7. a) Establish the relation between Green's theorem and Stoke's theorem. 5

   b) Verify Green's theorem in the plane for $\oint\{(x^2-2xy)dx+(x^2y+3)dy\}$, C is the closed curve of the region bounded by $y^2=8x$ and $x=2$. 5

Begum Rokeya University, Rangpur

Department of Computer Science and Engineering

BSc.(Engg.) 1st Year 1st Semester Final Examination-2019 (Session: 2018-19)

Course Code: PHY 1125 Course Title: Physics

Full Marks: 50 **Time:** 03 hours

N.B.: **Instruction for Candidates:**

i) The figures in the right margin indicate full marks.

ii) Answer any **FIVE** questions from the followings.

iii) All questions must be answered sequentially.

1. a) State and explain Biot- Savart law. 3

   b) Deduce the relation, $B = \frac{\mu_0 I}{2\pi R}$ where the symbols have their usual significance. 5

   c) A circular wire of diameter 10 mm carries a current 12 mA. Calculate the magnetic field at the center of the circular wire. 2

2. a) Show that the width of central maxima for diffraction is $\beta = \frac{2\lambda f}{a}$. 6

   b) What is granting constant? How many orders will be visible if the wavelength of incident radiation is 500 nm and the numbers of lines on the gritting is 14000 an inch? 4

3. a) What is polarization? State and prove Brewster law. 4

   b) Describe the polarization by double refraction. 3

   c) Determine the specific rotation of the given sample of sugar solution if the plane polarization is turned through 13.2^0. The length of the tube containing 10% sugar solution is 20. 3

4. a) Deduce the expression for Compton wavelength shift. 7

   b) A photoelectric surface has a work function of 4 eV. What is the maximum velocity of the photoelectrons emitted by light of frequency 10^{15} Hz incident on the surface? 3

5. a) Define nuclear force. Write down the properties of nuclear force. 4

   b) Find out nuclear density for ${}^{24}_{12}Mg$ nucleus. 2

   c) Define mass defect and binding energy. The binding energy of ${}^{14}_{7}N$ is 104.65 MeV. Find its mass in amu. 4

6. a) Define electric field and electric potential. 2

   b) State and prove Gauss law of electrostatics. 6

   c) Explain Ohmic and non-ohmic materials. 2

7. a) State the fundamental postulates of Bohr's theory. 2

   b) Derive an expression for the energy of an electron in the nth orbit. 6

   c) The wavelength of sodium D_1 line is 590 nm. Calculate the difference in energy levels involved in the emission and absorption of this line. 2

Department of Computer Science and Engineering

Begum Rokeya University, Rangpur.

B.Sc. (Hons.) 1st Year 1st Semester Final Examination, 2019. (Session: 2018-19)

Course Code: **EEE 1127**; Course Title: **Electrical Circuit Analysis.**

Time: 3.00 Hours | Full Marks: 50

Answer Any Five from the Given Questions

(Note: Numbers in the right margin indicate marks for each question. Answer the questions sequentially)

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1. (a) What are the different electrical circuit elements? Give their examples. 2+1=3

   (b) Write the merits and demerits of conductor and insulator. What do you mean by superconductor? 3+1=4

   (c) Write the properties of series and parallel circuits. 3

2. (a) Express transmission parameters in terms of Open and Short circuit impedances. 3

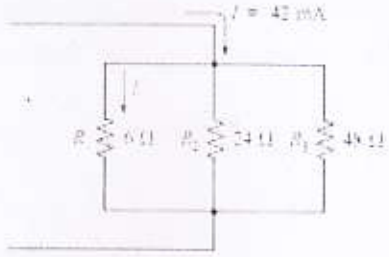
   (b) State and explain Kirchhoff's Laws. 4

   (c) Prove that "the current through any parallel branch is equal to the product of the total resistance of the parallel branches and the input current divided by the resistance of the branch through which the current is to be determined." 3

3. (a) What do you mean by current source and voltage source? Explain how one can interchange them? Write the properties of ideal voltage and current sources. 2+2+1=5

   (b) Explain why current sources of different current ratings are not connected in series. 2

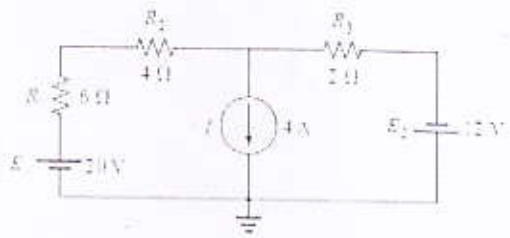
   (c) Calculate the current I_1 for the below network 3



4. (a) What do you mean by electrical circuit analysis? Define resonance in electrical circuits. 1+2= 3

   (b) Explain the mesh analysis method with proper circuit. 4

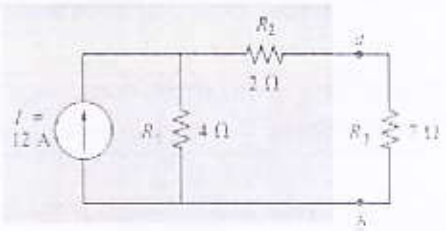
   (c) Using mesh analysis determine the currents for the given network 3



5. (a) Give the expression for star to delta and delta to star transformation.

(b) State and explain Norton's theorem with proper circuit.

(c) Find the Thevenin equivalent circuit of the shaded area of the network:



6. (a) Define ac current and a voltage. 2

(b) Write the general form of sinusoidal ac voltage and ac current and explain its different terms. 3

(c) Explain the response of basic R, L and C elements to a sinusoidal voltage and current with input and output wave forms. 5

7. (a) What do you mean by filter? What are different types of filter? 1+2=3

(b) Write the applications of filter in computer science. 2

(c) Explain the frequency response of R-C high and low pass filters with proper diagram. 5

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

2nd Year 1st Semester(Session 2016-17) Final Examination – 2018

Course Code: SOC 2123 **Course Title: Bangladesh Studies and Sociology**

Total Marks: 50 **Exam Duration: 3 Hours**

N.B

a) Answer any **five** questions.
b) All questions have **equal** marks.
c) All parts of each question must be answered **consecutively**.

1 Write an essay on the historical background of Bangladesh. 10

2 Write an account on the political condition of Bangladesh. 10

3 What are the socioeconomic impacts of globalization on human life? Briefly discuss it in context of Bangladesh. 10

4 What do you understand by educational development? Discuss. 10

5 Write an essay on the empowerment of women in Bangladesh. 10

6. What do you mean by patron-client relationship? Do you think this relationship is becoming intricate in terms of national politics of Bangladesh? Discuss. 10

7. Write an essay on the Digital Version of Bangladesh. 10