Begum Rokeya University, Rangpur

2016-17

First Year First Semester Final Examination- 2017

Department of Computer Science and Engineering

Course Code: CSE 1101 Course Title: Computer Fundamentals

Full Marks: 50 Time: 3 Hours

N.B. Answer any **FIVE** questions from the bellow. The figures on the right margin indicate full marks. All the parts of each question must be answered sequentially.

1. a) What do you mean by Computer? List the four key components of a computer system and define each of them. 4
   b) What do you mean by GIGO? 2
   c) Distinguish between analog and digital computer. 2
   d) What are the software related developments that took place during fourth generation period? 2

2. a) Mention the uses of secondary storage in a computer system. 2
   b) Define: Track, Sector and Cylinder in Hard- Disk. 3
   c) Calculate the capacity of a hard disk having 1632 cylinders, 12 heads, 54 sectors/track. (Hard disk generally store 512 bytes of data in a sector) 3
   d) Elaborate the terms: EEPROM, SRAM, CD-ROM and WROM. 2

3. a) What happens when you press a key on your keyboard? 2
   b) You should consider four factors when you comparing monitors. List and define them. 3
   c) Give the difference between inkjet and laser printer. 2
   d) What are the two advantages of LCD monitor compared to CRT monitors? 2
   e) What do you mean by resolution of a monitor? 1

4. a) Convert the Gray coded number 10101110 to its binary equivalent. 2
   b) What is BCD system and why is it called BCD? 2
   c) What is the octal equivalent of decimal number 859.238? Justify your answer. 3
   d) Perform binary division of 217 and 17. 3

5. a) What is the function of windows in a GUI? 2
   b) What are the major functions of an operating system? 3
   c) What is database model? Describe different types of database model? 3
   d) What are the working procedures of a device driver? 2

6. a) What do you mean by algorithm? Draw a flowchart for finding the greatest among the given three numbers. 3
   b) Differentiate between a compiler, an assembler and an interpreter. 3
   c) Briefly explain why windows operating system is one of the most popular operating systems. 4

7. a) What is computer network? Discuss different types of computer network. 4
   b) What factors should you consider when purchasing a modem? 2
   c) What happens when you provide a URL for your Web browser? 2
   d) What are the services provided by Internet? 2

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B.Sc. (Engg.) 1st year 1st Semester Final Examination, 2017. (Session: 2016-17)

Course Code: **EEE 1123** Time: **3.00 hours**

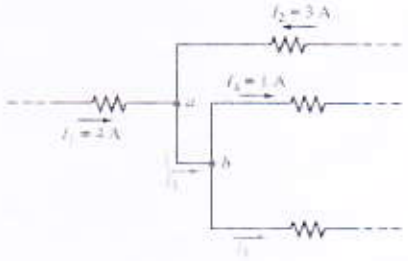
Course Title: **Electrical Circuit Analysis** Total Marks: **50**

*[N B: **Answer any five (5) questions and figures in the right margin indicate full marks]***

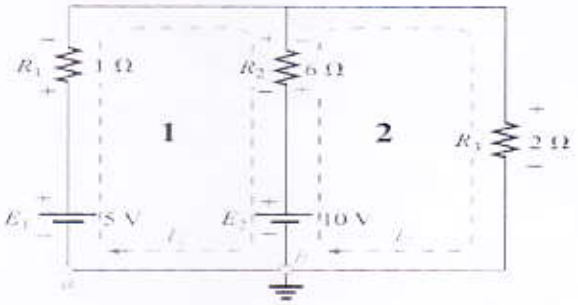
*[**All parts of each question must be answered sequentially**]*

1. a) Define series circuit and parallel circuit with circuit diagram. 2.5
   b) State and explain KVL and KCL with proper circuit diagram. 1+3
   c) State and explain the voltage divider rule with circuit diagram. 3.5

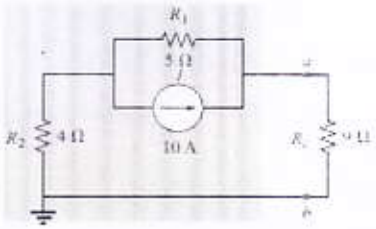
2. a) Define open circuit and short circuit. 2
   b) What is Bilateral circuit? Write a short note on "Delta-Star" network. 1+3
   c) Determine the value of I_3 and I_5 using KCL. 4



3. a) Define mesh, node and loop in a circuit. What do you mean by ideal source? 2+1
   b) Explain Mesh analysis method for dc circuit. 4
   c) Calculate the currents flowing through each branches using mesh analysis method in the below network. 3



4. a) Write the different network theorem for dc network analysis. 2
   b) State and explain Norton's theorem. 4
   c) Find the Norton's equivalent circuit for the below network in the shaded area of the network. 4



5. a) Define Amplitude, Time Period, frequency of ac. 3
   b) Write the general form of sinusoidal ac voltage and ac current and explain its different terms. 1+2
   c) Calculate the rms value of ac voltage and ac current. 4

6. a) Discuss how thevenize any given circuits with appropriate example. 4
   b) Explain the response of basic R, L and C elements to a sinusoidal voltage and current with input and output wave forms. 2×3

7. a) What do you mean by filter? Give its use. 1+1
   b) Discuss different type of capacitors. 3
   c) Explain the frequency response of R-C high pass filter with proper diagram. 5

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B.Sc. (Engg.) 1st year 1st Semester Final Examination, 2017. (Session: 2016-17)

Course Code: **ENG 1121** Time: **3.00 hours**

Course Title: **Technical English** Total Marks: **50**

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

[All parts of each question must be answered sequentially]

1. **Change voice of the following sentences as directed**: [any six] 6×1
   a) The burglars had cut an enormous hole in the steel hole. (Passive)
   b) Students are doing a lot of the work. (Passive)
   c) He was made to surrender his passport. (Active)
   d) A jellyfish stung her. (Passive)
   e) For a long time the earth was believed to be flat. (Active)
   f) Fortunately she was saved. (Active)
   g) She never drinks coffee. (Passive)

2. **Complete the following sentences:** [any six] 6×1
   a) Had she taken the medicine, she _____.
   b) Bangladesh cricket team celebrated joyfully after they _____.
   c) Scarcely had they finished the program when _____.
   d) He is angry because _____.
   e) She is learning English so that _____.
   f) Inspite of over population Bangladesh _____.
   g) If you don't apologise, he _____.
   h) The sun had set before they _____.

3. **Transform the following sentences as directed:** [any six] 6×1
   a) Will you ever get back these hay days? (assertive)
   b) Inspite of the girl's behaving rudely the father forgave her. (complex)
   c) She was sick and could not attend the class. (simple)
   d) Hilsha is one of the tastiest fishes in the world. (positive)
   e) Mother never told you about this matter. (interrogative)
   f) The tour was really wonderful. (exclamatory)
   g) The situation is too worse for the police to control. (negative)
   h) The girl who was in blue dress was my sister. (simple)

4. **Fill in the gaps with right form of verbs:** [any six] 6×.5
   a) We can go out now. It is _____ (not/rain) any more.
   b) He often _____ (read) newspapers but he has never read a novel.
   c) One of the dishes here _____ (be) very delicious.
   d) He kept me _____ (wait) for nothing.
   e) A new house _____ (build) now at the corner of the road.
   f) The novel *Himu* _____ (write) by Humayun Ahmed.
   g) It is the high time _____ (prevent) social violence.
   h) Did Azim post the letter after he _____ (write) it?

5. Change parts of speech of the following words as directed by adding or deleting suffixes and prefixes and make sentences with the new words: [any six] 6×1
   Examination (verb), Decide (noun), Popularity (adverb), Ability (adjective), Choose (noun), Successful (verb), Care (adverb), Encourage (noun)

6. Write a persuasive essay on 'Education through Mother Tongue'. You must show logical arguments to support your view. 13

7. Imagine you have come home with your family and have found that your house has been burgled. Write a letter telling a friend all about it. 10

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Course Code: **PHY 1125** Time: **3.00 hours**

Course Title: **Physics** Total Marks: **50**

[N B: Answer any five (5) questions and figures in the right margin indicate full marks]

[All parts of each question 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 12mA. Calculate the magnetic field at the center of the circular wire.	2
2.	a)	State and prove Ampere's law.	4
	b)	Deduce the relation. $\tau = \vec{m} \times \vec{B}$.	6
3.	a)	Write down the limitation of Coulomb's law.	2
	b)	State and prove Gauss's law.	4
	c)	Show that Coulomb law can be deduced from Gauss's law.	4
4.	a)	Write a short note on photoelectric emission.	3
	b)	State the law of radioactive disintegration. Show that in radioactive.	1+3
	c)	A carbon specimen found in a cave continued 1/8 as much C^{14} as an equal amount of carbon in living matter. Calculate the approximate age of the specimen. Half-life period of C^{14} is 5568 years.	3
5.	a)	State the fundamental postulates of Bohr's theory of the hydrogen atom.	2
	b)	On the basis of Bohr's theory deduce expressions for the radii and energies of an orbital electron of hydrogen atom and hence define spectral series of hydrogen atom.	6
	c)	An electron collides with a hydrogen atom in its ground state and excites it to a state of n=2. How much energy was given to the hydrogen atom in the inelastic collision?	2
6.	a)	What is meant by interference of light? Prove that the distance x between two successive bright fringes formed in Young's experiment is given by $x=\frac{D\lambda}{d}$, where the symbol have their usual significance.	1+6
	b)	Two straight and narrow parallel slits 1mm apart are illuminated by monochromatic light. Fingers formed on the screen held at a distance of 100 cm from the slits are 0.50 mm apart. What is the wavelength of light?	3
7.	a)	Define polarization of light. Derive an expression for the resolving power of a diffraction granting.	1+3
	b)	What are differences between interference and diffraction of light?	3
	c)	What are Newton ring's? How are they formed?	3

Begum Rokeya University, Rangpur.

Department of Computer Science and Engineering

B.Sc. (Engg.) 1st Year 1st Semester Final Examination-2017 (Session: 2016-17)

Course Title: **Algebra, Trigonometry and Vector** ; Course Code: **MAT 1122**

Time: **3.00 hours**

Total Marks: **50**

Answer any five from the given questions.

[Note: Numbers on right margin indicate the marks for each question. Answer the question sequentially]

1. a) Define transitive relation with example. Let S={1,2,3,4} and let R={(1,3), (4,2),(2,4), (2,3) (3,1)}. Then show that R is not a symmetric relation. 5

   b) If $f:\mathbb{R}\to\mathbb{R}$ be defined by $f(x)=x^3-3$ then prove that f is bijective function. Find $f^{-1}(24)$ *and* $f^{-1}(5)$. 5

2. a) If x, y, z are different and $\begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0$, then show that xyz+1=0. 5

   b) Prove that, $A \cap (A \cup B) = A \cup (A \cap B) = A$. 5

3. a) Define the relations between roots and coefficients of an equation. 5

   b) If α, β, γ are the roots of the equation $x^3 + qx + r = 0$, find the value of $\sum \frac{2\beta\gamma-\alpha^2}{\beta+\gamma-\alpha}$ 5

4. a) Find the sum of $1+\frac{1+a}{\lfloor 2}+\frac{1+a+a^2}{\lfloor 3}+\frac{1+a+a^2+a^3}{\lfloor 4}+\cdots\cdots\cdots to\ \infty$ 5

   b) Show that the points $-\bar{a}+4\bar{b}-3\bar{c}, 3\bar{a}+2\bar{b}-5\bar{c}, -3\bar{a}+8\bar{b}-5\bar{c}, -3\bar{a}+2\bar{b}+\bar{c}$ are coplanar. 5

5. a) Expand $cosx$ in ascending power of a. 5

   b) Find all the values of $(1+i)^{1/3}$. 5

6. a) Discuss the physical interpretation of curl. 5

   b) Prove,
   (i) $\vec{\nabla}.(\vec{A}+\vec{B}) = \vec{\nabla}.\vec{A}+\vec{\nabla}.\vec{B}$
   (ii) $\vec{\nabla}.(\varphi\vec{A}) = (\vec{\nabla}\varphi).\vec{A}+\varphi\,(\vec{\nabla}.\vec{A})$ 5

7. a) Verify Green's theorem in the plane for $\oint_C (xy+y^2)dx + x^2dy$, where C is the closed curve of the region bounded by $y = x$ and $y = x^2$. 5

   b) State Stokes theorem. Express Stokes theorem in the rectangular form.