2017 - 18

Department of Computer Science & Engineering

Begum Rokeya University, Rangpur

1st Year 1st Semester Final Examination – 2018

Course Title: Computer Fundamentals	Course Code: CSE1101
Total Marks: 50	Exam Duration: 3 Hours

Answer any of the five questions

1 a. What is an IC? How does it help in reducing the size of a computer? 3

b. In current world people can not imagine living at home without computers. Now you have to explain why do home users need their computers? 2

c. Briefly describe information processing cycle. 2

d. When you read a book, which copy you will prefer hard-copy or soft-copy? Defend you position. 2

e. What are the differences between WWW and Internet? 1

2 a. Define Cache Memory? Explain how does it contribute to improve computer speed? 3

b. When you buy a Computer, what factors should you consider? 3

c. Explain how software brings life in a machine? Classify software with respect to their functionalities. List out the names of ten programs and classify them. 4

3 a. Keyboard is a popular and convenient input device to write digital document. At the time of writing document when any one presses a key to the computer what appears to happen to accept input from the keyboard. Briefly describe each and every step. 4

b. Write short notes on the following terms: PROM, EEPROM, and Flash Memory 3

c. How much data (in MB) a Hard Disk can store if it has 120 plates, 15000 tracks in each plate, 80000 sectors in each track, and each sector can store 512 bytes (B) of data. 3

4 a. Write the basic norms to define identifiers in C. The identifiers count, Count, COUNT are same or different in C, explain your answer. 2

b. In what context, you will choose *Do-While* instead of *While-Do* loop. 1

c. When switch statement is used in C? Write three main features of switch statement 3

d. What is the difference between x-- and --x? 1

e. Explain how a ternary operator replaces certain statements of the if-then-else form. 3

5 a. Suppose you are doing job as a network engineer in a reported networking company. Your company assigns a project to you where you have to design a process to transfer electronic information between two locations, in this context which basic elements you have to go through. 4

b. There are so may network topologies we are using; now you mention which topologies are better on what context? 3

c. Define Linkers and Debuggers in context of system development programs. 3

6 a. Define machine language? Differentiate between a compiler, an assembler and an interpreter. 2

b. Mention broad functionalities of operating systems. 4

c. What is memory management? Briefly describe those properties of an operating system, which should be assured to develop its effective memory management approach? 4

7 a. Briefly describe process scheduling. 2

b. Write short notes on: 8

i.) Smart Healthcare System
ii.) Big Data
iii.) CD-ROM
iv.) Cache Memory

Begum Rokeya University, Rangpur
Department of Computer Science and Engineering
~~B.A. (Honours) 1~~st Year 1st Semester Final Examination- 2018
Course Code- ENG 1123
Course Title- ~~Professional~~ Technical English
(Including Questions No 1, answer *FIVE* questions from the follow~~ing~~ questions)
Time- 3 Hours Full Marks- 50

Group- A

1. Read the following text carefully and then answer the questions from I to III:

Meg answered the ruffian's question in a firm and steady voice- 'Because the Hour's come, and the Man.'
At the appointed signal, Bertram and Dinmont *sprang* over the brushwood, and rushed upon Hatteraick. Hazlewood, *unacquainted with their plan of assault*, was a moment later. The ruffian, who instantly saw he was betrayed, turned his first vengeance on Meg Merrilies, at whom he discharged a pistol. She fell, with a *piercing* and dreadful cry, between the shriek of pain and the sound of laughter, when at its highest and most suffocating height: 'I kenned (knew) it would be this way' she said.

Bertram, *in his haste*, slipped his foot upon the uneven rock which floored the cave: a fortunate *stumble*, for Hatteraick's second bullet whistled over him with so true and steady an aim, that had he been standing upright it must have *lodged* in his brain. Ere the *smuggler* could draw another pistol, Dinmont *closed with him* and endeavoured *by main force* to pinion down his arms. Such, however, was the wretch's personal strength, joined to the efforts of his despair, that, in spite of the gigantic force with which the Borderer grappled him, he dragged Dinmont through the *blazing* flax, and had almost succeeded in drawing a third pistol, which *might have proved fatal* to the honest farmer, had not Bertram, as well as Hazlewood, come to his assistance, when, by main force, and no ordinary exertion of it, they drew Hatteraick on the ground, *disarmed* him and bound him. This scuffle, though it takes up some time in the narrative, passed in les than a single minute. When he was fairly mastered, after one or two desperate and almost convulsionary struggles, the ruffian lay perfectly still and silent. 'He's going *to die game* anyhow,' said Dinmont; 'well, I like him none the worse for that.'
This observation honest Dandie made while he was shaking the blazing flax from his rough coat and shaggy black hair, some of which had been *singed* in the *scuffle*. 'He is quite now,' said Bertram; 'stay by him, and do not permit him to stir till I see whether the poor woman be alive or dead.' With Hazzlewood's assistance he raised Meg Merrilies.
'I kenned it would be this way,' she muttered, 'and it's even this way that it should be.'

The ball had penetrated the breast below the throat, it did not bleed much externally, but Bertram, accustomed to see gun-shot wounds, thought it the more alarming.

'Good God! What shall we do for this poor woman?' said he to Hazlewood...

'My horse stands tied above in the wood,' said Hazlewood. 'I have been watching you these two hours. I will ride off for some assistants that may be trusted,'... he hastened away. Bertram, after binding Meg Merrilies's wound as well as he could, *took station* near the mouth of the cave with a cocked pistol in his hand: Dinmont continued to watch Hatteraick, keeping a grasp, like that of Hercules, on his breast. There was a dead silence in the cavern, only interrupted by the low and suppressed moaning of the wounded female, and by the hard breathing of the prisoner.

I. **Answer the following questions by using only one sentences:** (6x1=6)

(a) Why did the smuggler fire at the old gipsy woman, Meg Merrilies, first?

(b) Why did Hatteraick's second shot miss Bertram?

(c) What proves that Hatteraick was a very strong man?

(d) How did Bertram know that Meg would die?

(e) Where did Hazzlewood go and why?

(f) Supply a suitable short title to the passage.

II. **Give the meaning of these words taken from the text and then use them in other sentences to bring out their meaning clearly.** (4x0.5=2)

(a) sprang; (b) stumble; (c) blazing; (d) scuffle.

III. **Give the meaning of these expressions taken from the text and then make sentences by using them.** (4x0.5=2)

(a) at the appointed signal; (b) unacquainted with their plan; (c) might have proved fatal; (d) to die game.

Group-B

(Answer any *FOUR* questions from the following questions)

2. I. **Change the following words according to the direction and then make sentences by using the changed words.** (5x1=5)

(a) poison (adjective); (b) bright (verb); (c) amuse (adjective); (d) severe (noun); (e) gallant (noun).

2. II. **Write sentences that show the difference between these pairs of words.** (5x1=5)

(a) greed and grade; (b) discussed and disgust; (c) medal and meddle; (d) road and rowed; (e) rein and reign.

3. I. **Give the meaning of these expressions printed in italics. Use them in further sentences:** (5x1=5)

(a) It will certainly be *a feather in your cap* if you get such an important order for the firm.

(b) Sitting listening to the wireless, he did not know that a *burglar* was in his bedroom, stealing his wife's jewels.

(c) Hurry up because he gets very *impatient* if you keep him waiting.

(d) There had been no rain for weeks and so the ground was *parched.*
(e) It is too cheap to be real silk; it must be *artificial.*

3. II. Give the meaning of these expressions and then use them in suitable contexts: (5x1=5)

(a) at a brisk trot; (b) to give the cold shoulder to; (c) a thorn in the flesh; (d) to lend a hand; (e) high-spirited.

4. I. Give the words opposite in meaning to these, and then use these opposites in sentences: (5x1=5)

(a) raise; (b) severe; (c) accurate; (d) fresh; (e) sufficient.

4. II. Write questions to which the following are suitable answer. (5x1=5)

(a) Much better, thank you.
(b) I suppose he changed his mind.
(c) Not more than three or four, I think.
(d) Thank you very much, I would.
(e) The road is extremely jam porn.

5. (a) What is argumentative paragraph? Write a paragraph on "Knowledge is Power".
Or
(b) What is process analysis paragraph? Write a paragraph on "How to Make Tea". (2+8=10)

6. I. Put the correct form of the verb in brackets in the following sentences. (5x1=5)

(a) He (to tear) his coat as he climbed over the fence.
(b) The boy admitted that it was he who (to throw) the stone at the window.
(c) Weather forecast says that tomorrow the ..... (set) at 6:45 pm.
(d) Recently he ..... in a new company. (join)
(e) I have ..... my dinner with my parents. (have)

6. II. Explain the meaning of the following expressions. (5x1=5)

(a) To give the cold shoulder to.
(b) On the spur of the moment.
(c) The coast is clear.
(d) The black sheep of the family.
(e) To blow your own trumpet.

7. (a) Write a letter to a friend describing a meal that you prepared recently, not with complete success, for your family. Write about 200 words. (10)

Or,

(b) Someone writes an article in a paper, saying that all stray dogs should be shot. Write a letter to the paper in which you strongly oppose that suggestion.

Department of Computer Science and Engineering
Begum Rokeya University, Rangpur
1st Year 1st Semester Final Examination - 2018

Full Marks: 50 MAT 1122: Algebra, Trigonometry and Vector Time: 3 Hours

[Answer any **five** questions of the following. Each question carries a total of 10 marks]

1. (a) Define *set* with example. How many ways are there to specify a particular set? Discuss each of them with examples. (5)

   (b) Consider the following data among 100 students in a college: (5)

   25 students are on list A
   30 students are on list B
   15 students are on both lists.

   Find the number of students: i) on list A or B ii) on exactly one of the two lists iii) on neither list

2. (a) Define equivalence relation with example.Give examples of relations R on $A = \{2, 3, 4\}$ having the property of (5)

   1. both symmetric and antisymmetric
   2. neither symmetric nor antisymmetric

   (b) Define function. Sketch the graph of $f(x) = x^2 + x - 1$. Find the domain and ranges of $f(x) = \sqrt{x^2 - 1}$ (5)

3. (a) Write the fundamental properties of determinants (5)

   (b) Solve the system of equations: (5)

   $2x - y - z = 4$
   $x - 2y + z = 5$
   $-x - y + 2z = 1$ by Cramer's rule.

4. (a) Prove that every equation of degree n has exactly n roots. (5)

   (b) If a, b, c are the roots of $x^3 + qx + r = 0$, find the value of $\sum (b - c)^2$ and $\sum \frac{1}{b+c}$ (5)

5. (a) Sum to n terms of the series (5)
   $1 + (1 + 4) + (1 + 4 + 7) + (1 + 4 + 7 + 10) + \ldots$ to n terms

   (b) Define *dot product* and *cross product*. Find a unit perpendicular vector of $\mathbf{A} = 3\mathbf{i} - 5\mathbf{j} + \mathbf{k}$ and $\mathbf{B} = 2\mathbf{i} - 4\mathbf{j} + 7\mathbf{k}$ (5)

6. (a) State and prove the De Moivre's theorem. (5)

   (b) Expand $\cos 6\theta$ and $\sin 6\theta$ in powers of $\cos\theta$ and $\sin\theta$ (5)

7. (a) Show that the absolute value of the triple product $\vec{A} \cdot (\vec{B} \times \vec{C})$ is the volume of a parallelepiped with sides $\vec{A}$, $\vec{B}$ and $\vec{C}$ (5)

   (b) Suppose $\vec{A} = 2i + j - 3k$ and $\vec{B} = i - 2j + k$. Find vectors of magnitude 5 perpendicular to both $\vec{A}$ and $\vec{B}$ (5)

Begum Rokeya University, Rangpur
Department of Computer Science and Engineering

B.Sc. (Engg.) 1st Year 1st Semester Final Examination-2018 (Session: 2017-2018)

Course Code: **PHY 1125** Course Title: **Physics**

ıe: 3 hours Full Marks: 50

[Answer any five of the following questions. The figure on the right margin indicates the full marks of the question]

1.a) Write down Maxwell's general equations in differential and integral form with physical interpretation. 5

b) Write down Maxwell's equations in free space. Derive the electromagnetic wave equation in terms of free space. 5

2. a) Define divergence and curl of a vector field. Derive Stoke's theorem. 3

b) Find the expressions for Ampere's circuital law in differential and integral form. 4

c) Deduce the magnetic field inside a long solenoid. 3

3. a) Derive the wave equation for electromagnetic wave propagating through a conducting media, and also derive the expressions for phase velocity and refractive index. 7

b) Define skin depth. Calculate the skin depth of sea water at a frequency of 58.6 KHz. The conductivity of sea water at that frequency is 4.3 mho/m. (consider $\mu = \mu_0$). 3

4. a) What is monochromatic light? Why does sodium light use in Newton's ring experiment. What happen if white light is used in this experiment? 4

b) Derive an expression for the wavelength of monochromatic light in case of Newton's rings experiment. 3

c) Explain why the central spot is dark in Newton's ring. How can we get central bright spot? 3

5. a) Define work function, stopping voltage and photo electron. 3

b) Explain photoelectric effect. Give the important features of the photoelectric effect and show how these are explained by quantum theory. 4

c) Ultraviolet light of wavelength 350nm and intensity $1.00\,W/m^2$ is directed at a potassium surface. (i) Find the maximum KE of the photoelectrons.(ii) if 0.50 percent of the incident photons produce photoelectrons, how many are emitted per second if the potassium surface has an area of $1.00cm^2$? 3

6. a) What do you mean by (i) electric field, (ii) electric potential and (iii) dipole moment? 3

b) Obtain expressions for the potential and field due to an electric dipole. Show that the electric field due to a dipole at a point on its axis is twice as strong as that at a point at the same distance along the perpendicular axis. 7

7. a) What is diffraction of light? Explain clearly the difference between interference and diffraction phenomena of light. 5

b) Describe single slit experiment. Show that the diffraction pattern consists of a central bright maximum followed by secondary maxima and minima on both the sides. 3

c) Find the half angular width of the central maximum in the Fraunhofer diffraction pattern of a slit of width 12×10^{-5} cm when the slit is illuminated by monochromatic light of wavelength 6000Å. 2

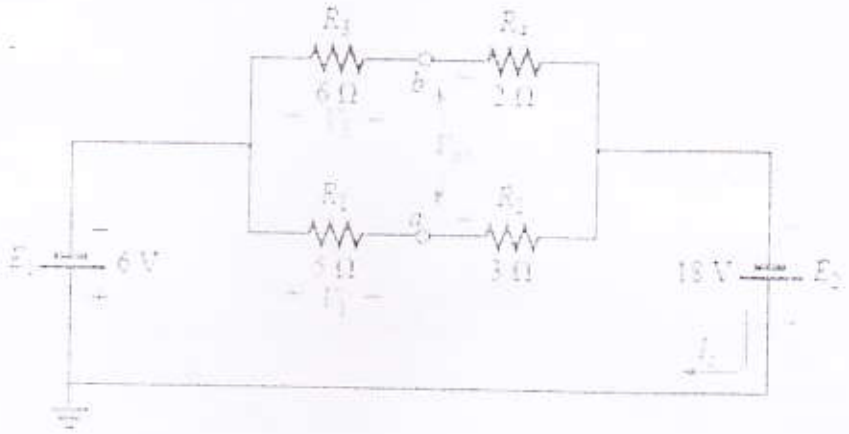
Department of Computer Science and Engineering
Begum Rokeya University, Rangpur
B.Sc. 1st Year 1st Semester Final Examination-2018 (2017-18)
Course Title : Electrical Circuit Analysis
Course Code: EEE 1127

Time: 3 Hours

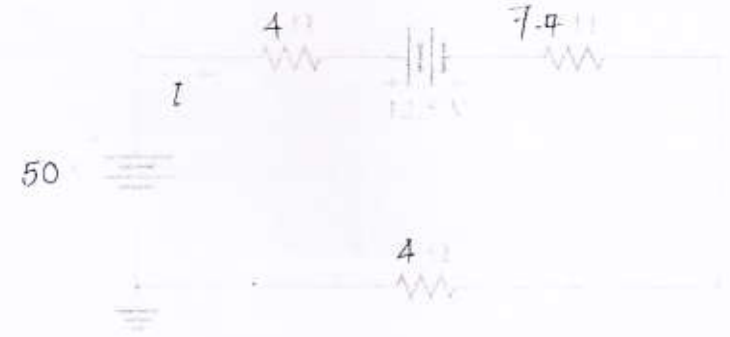
Note: i) Answer any FIVE questions from the following questions
ii) Numbers in the right margin indicate marks for each question.

1. (a) What are the applications of the electrical circuits in computer science? 2
   (b) Define conductor and insulator with examples. Write their merits and demerits. 5
   (c) What are charge, current and voltage? 3

2. (a) Write the difference between resistor, capacitor and inductor. 3
   (b) Wha do you mean by electrical circuit? Explain series and parallel circuits with their characteristics. 4
   (c) Calculate the voltages V_1, V_2 and V_{ab} for the network of the folllowing figure. 3

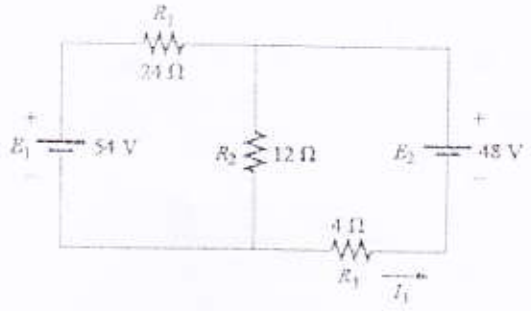


3. (a) Write the properties of open circuit and close circuit with proper circuits. 3
   (b) Determine I and the voltage across the 7Ω resistor for the network given below: 3

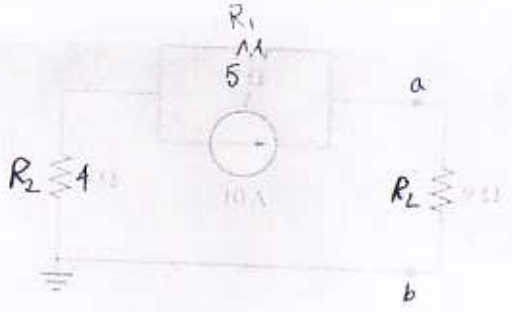


   (c) State and explain the current divider rule. 4

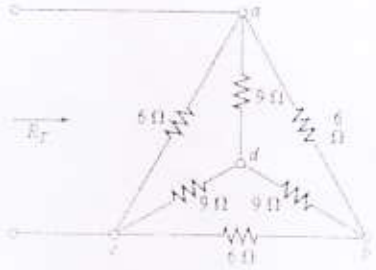
4. (a) State and explain Norton's theorem. 5
   (b) Using superposition, determine the current through the 4Ω resistor of the figure given below- 5



5. (a) Write the name of different network theorems for dc circuit analysis. 2
   (b) State and explain Thevenin's theorem with proper circuit. 4
   (c) Find the Norton equivalent circuit of the shaded area of the network. 4



6. (a) Write the general form of ac and give the physical meaning of the used symbols. 2
   (b) Explain the response of ac when passing through resistor, capacitor, and inductor. 4
   (c) Find the total resistance of the network shown in the following figure- 4



7. (a) State and explain Kirchhof's laws. 4
   (b) Determine the current supplied by the battery in the circuit shown in the figure below- 6