Heaven's light is our guide
**Rajshahi University of Engineering & Technology**
B.Sc. Engineering 1st Year Odd Semester Examination, 2016
**Department of Computer Science & Engineering**
Course no. Hum 1113   Course Title: **Functional English**
Full marks: 72    Time: **Three (03) hours**

*N.B.* Answer **six** questions, taking **three** from each section.
The questions are of equal value
Use separate answer script for each section.

## SECTION-A

Q1  (a)  State different techniques of reading.                                         06
     (b)  Mention basic sentence patterns with examples.                                06

Q2  (a)  Prepare a tender notice for buying some electronic goods for your company.     06
     (b)  Complete the sentences.                                                       06
          (i)  Because he was ill, _____.
          (ii) Unlike Limon, he _____
          (iii) One should respect _____
          (iv) He is too unsmart _____
          (v)  May I call you _____.
          (vi) _____ in case I forget the meeting.

Q3  (a)  Small is smart in technology – amplify the statement.                          06
     (b)  Discuss the following punctuations:                                           06
          Semicolon; Period; Comma.

Q4  (a)  Discuss different types of modifiers.                                          06
     (b)  What is NP? Discuss the positions of noun.                                    06

## SECTION-B

Q5  (a)  Reading the text carefully and answer the questions that follow:

Rabindranath, the fourteenth child of Debendranath and Sarada Devi, went to school early and wrote his first verse at the age of eight. At the age of seventeen in 1878, he arrived in London, on the way to Britain, to join his brother's family and attend school there. London made a poor impression on him. He described it as a dismal city, smoky, foggy and wet, with everyone jostling and in a hurry. He was put up in a lodging house facing Regent's Park but later moved to the house of a professional coach, a Mr. Scott, as a paying guest.

Away from the home of his brother's family he was lucky to find a friendly English family with whom he spent some time, but not without some initial oppositions from the two daughters in the family who were rather taken aback with the presence of a blackie in the house and went away to stay with relatives. They returned only after being reassured that the stranger was harmless. Dr. and Mrs. Scott, the girls' parents, in fact, treated him like a son.

In 1880, Rabindranath was called back to India. His letters full of admiration for English Society made his family think again about the wisdom of letting him loose in England alone. He returned home without any qualification of distinction.

Questions:
          (a) Answer the following questions:                                          06
               (i)   Did Rabindranath enjoy his visit to London?
               (ii)  Why did the daughters of the English family oppose his staying with them?
               (iii) Why was he called back to India?
          (b) Change the following as directed and make sentences with them.           06
               impression (to adjective); poor (to noun); lucky( to adverb); friendly( to verb); admiration (to adverb); age (to adjective)

Q6. (a) Define a clause. Discuss different types of conditional sentences with example. **06**
    (b) Given two synonyms and two antonyms of each of the followings words: **06**
    Splendid; Worthless; Appreciate; Uncultured; Funny; Supple.

Q7. (a) Punctuate and capitalse the following: **04**
    Whenever i go to westgate i stay at the grand hotel in spite of its name it is not very grand but it is cheap clean and comfortable what is more i knew the manager well so i never have to go to the trouble of reserving a room the fact that i always get the same room never fails to surprise me
    (b) Re-write the following sentences correctly: **04**
       (i) It was long since I see her last.
       (ii) This is the wisest plan of the two.
       (iii)The villagers help themselves.
       (iv)Nobody liked her, did any?
    (c) Write short notes on the following: **04**
       (i) Adjustment Letter
       (ii) Linking Verb

Q8. (a) Suppose you are the Head of the Department of CSE, Write a memo to all the teachers calling monthly meeting. **06**
    (b) Prepare a CV of yourself. **06**

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Heaven's light is our guide
Rajshahi University of Engineering & Technology
B.Sc. Engineering 1ˢᵗ Year Odd Semester Examination, 2016
Department of Computer Science & Engineering
Course no: EEE 1151   Course Title: Basic Electrical Engineering
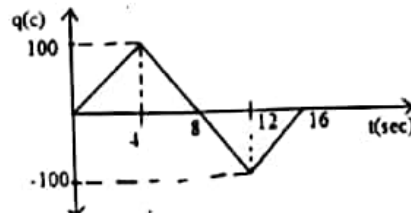Full marks: 72     Time: Three (03) hours

*N.B.* Answer six questions, taking **three** from each section.
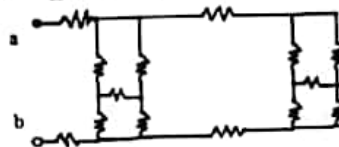The questions are of equal value.
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## SECTION-A

Q1 (a) State (i) Ohm's Law, (ii) KCL, and (iii) KVL      03

   (b) The charge flowing in a wire is plotted in the following figure. Find and sketch the   03
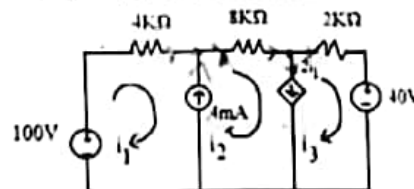   corresponding current.



   (c) Find the equivalent resistance $R_{ab}$ for the following circuit. Each resistor is $100\Omega$.   03



   (d) Compute the power absorbed or supplied by each element of the following circuit   03
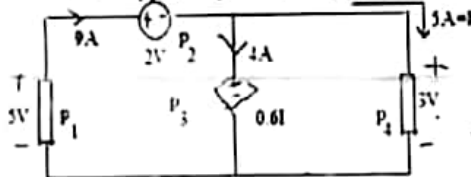


Q2. (a) How are mesh equations written when a current source exists between two meshes?   04
   Using this technique find $i_1$, $i_2$, and $i_3$ as indicated in the following circuit.



   (b) Explain nodal analysis technique to obtain node voltages of 3 node circuit.   05

   (c) Explain the homogeneity property and additively property with suitable examples.   03

Q3 (a) Define resonance, half-power frequencies, bandwidth, and quality factor.   04

   (b) Deduce the relation among bandwidth, resonant frequency, and quality factor.   05

   (c) Determine the resonant frequency of the following circuit   03
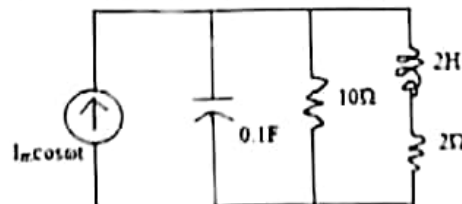


Q4 (a) What is meant by Fourier analysis? Why is it important? Write down the sufficient   05
   conditions for a Fourier series to exit

   (b) What is meant by frequency spectrum of a signal?   02

   (c) Obtain the Fourier series and frequency spectrum of the following voltage   05
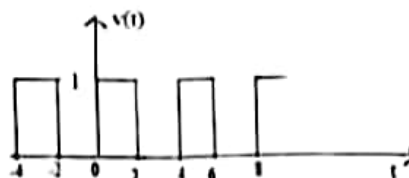
# SECTION-B

**Q5 (a)** What are meant by 'power factor' and power factor improvement? Why power factor **04** improvement is necessary? Give an example method for power factor correction. **04**

**(b)** Compute the rms value of the following alternating voltage.
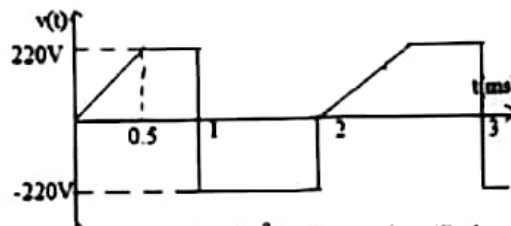


**(c)** For a load, $V_{rms} = 110 < 85°V$, $I_{rms} = 0.4 < 15°A$. Determine (i) the complex and apparent **04** powers, (ii) the real and reactive powers, and (iii) the power factor and load impedance.

**Q6. (a)** Derive the expression of average power in an ac circuit. Hence obtain the same for (i) **06** pure resistive circuit, (ii) pure inductive circuit, and (iii) pure capacitive circuit.

**(b)** Obtain $I_1, V_1$, and average power delivered in the following network. **06**
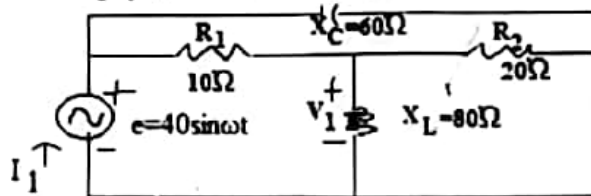


**Q7. (a)** State Thevenin's theorem. How is the Thevenin's impedance of a circuit determined **06** when it contains dependent sources? Refer to the following circuit, a load $R_L$ is connected between terminals a and b. Find the value of $R_L$ that results maximum power in it.
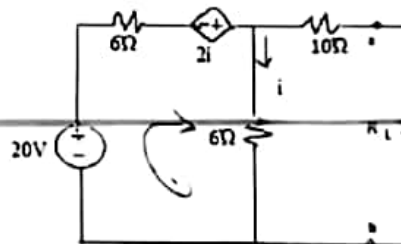


**(b)** Draw the Norton's equivalent circuit for the following network with respect to terminals **05** a and b.
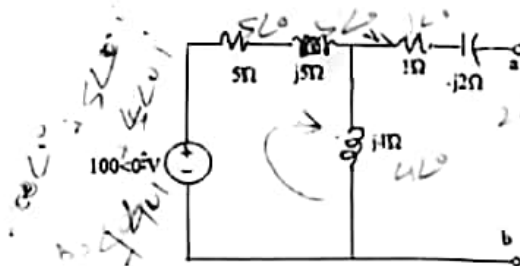


**Q8. (a)** Define Q-factor and selectivity. Prove that $B = \dfrac{\omega_o}{Q}$, where B = half power bandwidth, **06** Q = quality factor and $\omega_o$ = resonant frequency.

**(b)** Write the PSpice source file for the following circuit calculate and print the current $i_1$ **06** and $i_2$.
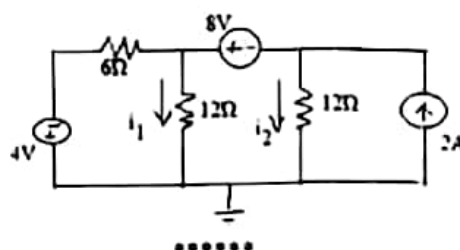


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Heaven's light is our guide
**Rajshahi University of Engineering & Technology**
B.Sc. Engineering 1ˢᵗ Year odd Semester Examination, 2016
Department of Computer Science & Engineering
Course no: **Chem 1113**   Course Title: **Inorganic and Physical Chemistry**
Full marks: 72    Time: Three (03) hours

*N.B.* Answer six questions, taking **three** from each section.
The questions are of equal value.
Use separate answer script for each section.

## SECTION-A

Q1. (a) State and explain thermochemical laws. **06**

(b) Describe how enthalpy of neutralization can be determined calorimetrically. **04**

(c) What is bond enthalpy? **02**

Q2. (a) What is transport number? Describe the moving boundary method for the determination of transport number of an ion. **06**

(b) Write the Debye-Huckel-Onsager equation and explain the terms involved. **04**

(c) What is equivalent conductance? **02**

Q3 (a) What is chemical bond? Classify the important chemical bonds. **04**

(b) What is ionic bond? What are the factors favoring the formation of ionic bond? **04**

(c) Define and explain sigma ($\sigma$) bond and pi ($\pi$) bond. **04**

Q4. (a) What are colloids? Distinguish between lyophilic and lyophobic colloids. **05**

(b) Describe a method for the purification of colloidal solution. **04**

(c) Define electrophoresis and tyndal effect. **03**

## SECTION-B

Q5. (a) What is solution? Describe the different ways of expressing the concentration of a solution. **07**

(b) State and explain Henry's law. Mention its limitations. **05**

Q6. (a) State and explain Nernst distribution law? **04**

(b) Prove the statement "Multi step extraction is more economical than a single step extraction". **04**

(c) Calculate the volume of concentrated $H_2SO_4$, of specific gravity 1.84 and containing 98% $H_2SO_4$ by weight that would contain 40g of pure $H_2SO_4$. **04**

Q7. (a) What is osmotic pressure? How is molecular weight of a solute determined from osmotic pressure? **05**

(b) Describe Brekley and Hartley's method for the determination of osmotic pressure. **05**

(c) Why chemical equilibrium is called dynamic equilibrium? **02**

Q8. (a) Distinguish between order and molecularity of reaction. **04**

(b) Derive an expression for the rate constant of a 2ⁿᵈ order reaction where the reactants are different. **04**

(c) Benzene diazonium chloride decomposes in presence of water according to first order kinetics. If the rate constant at 25°C is $2.8 \times 10^{-3}$ min⁻¹ and activation energy is 11.9 KCal/mole, find the rate constant at 35°C. **04**

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