

Pabna University of Science and Technology
 B.Sc. (Engineering) 1st Year 2nd Semester Examination-2019
 Session: 2018-2019

Course Code: ENG-1201

Course Title: Fundamental English

- NB:
1. Answer any SIX (THREE from each part) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 70.

PART-A

1. Use the correct form of verbs.

11 $\frac{2}{3}$

- i. Runu along with her friends (to be) present in the seminar.
- ii. Since they (get) the information later, they had to use the back door.
- iii. While (enter) into the room, they saw a huge crowd.
- iv. In the seminar, the keynote speaker said that cleanliness (to be) a great virtue.
- v. He also said, "It is high time you (clean) your own campus."
- vi. At night Runu thought of (clean) her campus.
- vii. Next day she got the campus little bit (change).
- viii. No sooner had she crossed the Library building, she (see) all the friends together.
- ix. She jumped as if she (to be) in the paradise.
- x. A number of boys (to be) behind that great job.
- xi. If they knew the idea before, they (make) their campus more beautiful.

2. a) Transform the following sentences as directed.

5

- i. Everybody knows Humayun Ahmed. (Negative)
- ii. He is one of the greatest playwrights in Bangladesh. (Positive).
- iii. When he wrote *Kothao Keu Nei*, he got countrywide popularity. (Simple)
- iv. Despite being innocent, Mr. Baker faced death penalty. (Complex)
- v. What a great drama it was! (Assertive)

- b) Write an antonym for each of the following word and frame a sentence with it.

6 $\frac{2}{3}$

- i. Fertile ii. Frank iii. Obscure iv. Eternal v. Gallant vi. Gratify

3. a) Change the direct speech into indirect speech.

6 $\frac{2}{3}$

- i. Apurbo said to Mehjabin, "Have you attended the English class today?"
- ii. She said, "Yes, I attended."
- iii. He said to her, "Will you tell me the gist of it?"
- iv. She said, "The course teacher has suggested us to speak English all the time."
- v. He said, "Let us discuss on some issues in our free time."
- vi. She said to him, "It's a good idea."

- b) Convert the following words into different parts of speech as directed.

5

- i. Heart (verb)
- ii. Imagine (Adjective)
- iii. Save (Noun)
- iv. Flight (Verb)
- v. Strengthen (Adjective)

4. a) Complete the following sentences.

8

- i. Paris is the place where _____.
- ii. 1971 is the year when _____.
- iii. A proverb goes that _____.
- iv. They know _____.
- v. Do you know how _____?
- vi. It is high time we _____.
- vii. Would you mind _____?
- viii. I wish I _____.

b) Make sentences with the following idioms (any four).

$3\frac{2}{3}$

- i. At stone's throw
- ii. Carry the day
- iii. Far cry
- iv. Bird's eye view
- v. Salt of life

PART-B

5. Write a report on the following.

$11\frac{2}{3}$

- i. A Fire Accident
- ii. Frequent Road Accidents

writing

Safe

$11\frac{2}{3}$

6. Write a paragraph on the following.

- i. How to Solve Unemployment Problem
- ii. Importance of Reading Books

7. Suppose you are a graduate named Sabrina Afroz/ Kamal Newaz from the ICE Department of a reputed university. Write a cover letter to the Registrar of Bogra University of Science and Technology for the post of a lecturer in Department of Information and Communication Engineering and attach your CV.

$11\frac{2}{3}$

8. Complete the following dialogue.

A discussion between two friends, Safeer and Nameer, on the developing projects of the government of Bangladesh.

$11\frac{2}{3}$

Department of Information and Communication Engineering
Pabna University of Science and Technology
 B.Sc. (Engineering) 1st Year 2nd Semester Examination-2019
 Session: 2018-2019

Course Code: Math-1201

Course Title: Integral Calculus and Differential Equations

- NB: 1. Answer any SIX (THREE from each part) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 70

Part A

1. ✓ a) Evaluate any three of the following integrals

9

$$\text{i) } \int \sqrt{\frac{a+x}{a-x}} dx \quad \text{ii) } \int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx \quad \text{iii) } \int e^x \frac{2+\sin 2x}{1+\cos 2x} dx \quad \text{iv) } \int \frac{dx}{\sin x + \cos x}.$$

- b) If $u = \int e^{ax} \cos bx dx$ and $v = \int e^{ax} \sin bx dx$ then prove that

$2\frac{2}{3}$

$$\text{i) } \tan^{-1} \frac{v}{u} + \tan^{-1} \frac{b}{a} = bx$$

$$\text{ii) } (a^2 + b^2)(u^2 + v^2) = e^{2ax}.$$

- ✓ 2. a) Prove that $\int_0^{\frac{1}{2}\pi} \frac{dx}{(a^2 \cos^2 x + b^2 \sin^2 x)^2} = \frac{\pi}{4} \frac{a^2 + b^2}{a^3 b^3}$.

4

- b) Evaluate $\lim_{n \rightarrow \infty} \left[\frac{n}{n^2+1^2} + \frac{n}{n^2+2^2} + \dots + \dots + \dots + \frac{n}{n^2+n^2} \right]$.

3

- c) Show that $\int_0^1 \frac{\log(1+x)}{1+x^2} dx = \frac{\pi}{8} \log 2$.

$4\frac{2}{3}$

- ✓ 3. a) Define gamma function and beta function. Show that $\Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}$.

$4\frac{2}{3}$

- b) Find the arc length of the parabola $x^2 = 4ay$ measured from the vertex to one extremity of the latus-rectum.

4

- c) Find the volume of a sphere of radius a.

3

4. a) If $I_n = \int_0^{\frac{1}{2}\pi} \tan^n x dx$, show that $I_n = \frac{1}{n-1} - I_{n-2}$, and hence find the value of

$4\frac{2}{3}$

$$\int_0^{\frac{1}{2}\pi} \tan^6 x dx.$$

- b) Find the area of the quadrant of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ between the major and minor axis.

3

- c) Find the area of the segment cut off from $y^2 = 4x$ by the line $y = x$.

4

$$b^2 - a^2 \cos^2 x \\ \therefore b^2 - a^2 \cos^2 x = b^2 - a^2 \left(\frac{x^2}{a^2} \right) = b^2 - x^2 \\ \therefore b^2 - x^2 = b^2 - a^2 \left(\frac{x^2}{a^2} \right)$$

Part B

5. a) Find the differential equation of all circles passing through the origin and having their centers on the y-axis. 3
- b) Define separable equation and solve: $2r(s^2 + 1)dr + (r^4 + 1)ds = 0$. 3
- c) Show that the transformation $y = vx$ will reduce it into separable equation and solve the differential equation $(x^2 - 3y^2)dx + 2xy dy = 0$. $5\frac{2}{3}$
6. ✓ a) Define an Integrating factor. Find the integrating factor and solve the equation $(x^2 + 1)\frac{dy}{dx} + 4xy = x$. 4
- b) Suppose $n \neq 0$ or 1. Then the transformation $v = y^{1-n}$ reduces the Bernoulli equation $\frac{dy}{dx} + P(x)y = Q(x)y^n$ to a linear equation in v . 3
- c) Define Bernoulli's equation and solve $\frac{dy}{dx} + \frac{y}{2x} = \frac{x}{y^3}, y(1) = 2$. $4\frac{2}{3}$
7. ✓ a) Define orthogonal trajectories. Find the orthogonal trajectories of the family of parabolas $y = kx^2$. $5\frac{2}{3}$
- b) Solve the equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y = e^x \sin x$ using a suitable method. 6
- a) If $y_1(x)$ and $y_2(x)$ are linearly independent solutions of the corresponding homogeneous equation of $a_0(x)y'' + a_1(x)y' + a_2(x)y = F(x)$ then find its general solution. $4\frac{2}{3}$
- b) By the method of variation of parameters solve: $y'' + y = \tan x$. 3
- c) Find the general solution of the system of linear differential equations $\dot{x} = 2x + 7y, \dot{y} = 3x + 2y$ by using Euler's method. 4

Department of Information and Communication Engineering

Pabna University of Science and Technology

B.Sc. (Engineering) 1st Year 2nd Semester Examination-2019

Session: 2018-2019

Course Code: ICE-1205

Course Title: Circuit Theory and Analysis

NB: 1. Answer any SIX (THREE from each PART) questions.

2. Figures in the right margin indicate marks.

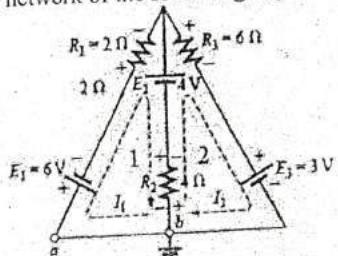
3. Parts of the same question should be answered together and in the same sequence.

Total Marks: 70

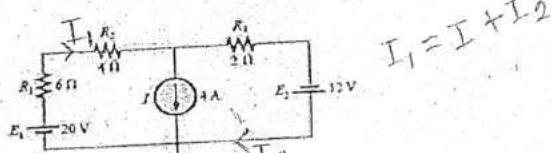
Time: 3 Hours

PART-A

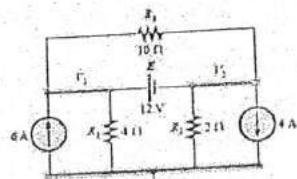
- 1✓ a) Define the following terms: Circuit, Linear Circuit, Bilateral Circuit, Ideal voltage source and Ideal current source. 5
- b) Explain how voltage sources in series may be combined. Explain under what conditions i) voltage sources in series and ii) current sources in parallel are allowed. Give examples. $6\frac{2}{3}$
- 2✓ a) With suitable diagram explain voltage and current divider rules. $4\frac{2}{3}$
- b) Explain source conversion procedures. $3\frac{2}{3}$
- c) Find the branch currents of the network of the following Figure using mesh analysis. 4



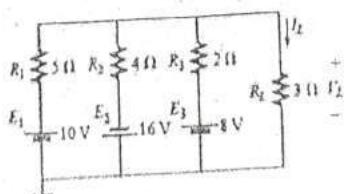
- 3✓ a) Explain the term 'Supermesh current'. Using mesh analysis, determine the currents of the following network. 4



- b) Determine the nodal voltages V_1 and V_2 of the following Figure using the concept of a supernode. 5

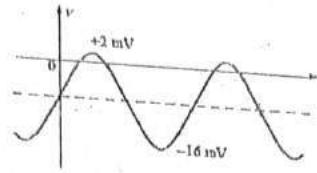


- c) Why do need to study network theorems? $2\frac{2}{3}$
4. a) With suitable illustration, state and explain Norton's network theorem. $5\frac{5}{5}$
- b) Using Millman's theorem, find the current through and voltage across the resistor R_L of following figure:



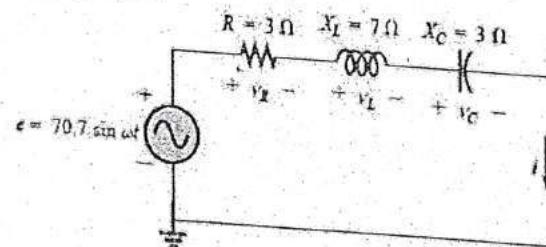
- c) Why Reciprocity theorem is not applicable in the analysis of multisource networks? Explain briefly. $1\frac{2}{3}$

5. a) Define the terms: Instantaneous value, Lagging waveform, Leading waveform, Phase relationship, and RMS value. 4
 b) Briefly explain general format for the sinusoidal voltage and current. 3
 c) Give the concepts of average value with suitable example. Determine the average value of the following waveform. 2



6. a) Deduce the expression for average power delivered to a load for sinusoidal voltage and current. 4
 b) The voltage across a $1\text{-}\mu\text{F}$ capacitor is provided by $v = 30 \sin 400t$. What is the sinusoidal expression for the current? Sketch the v and i curves. 3
 c) Determine the average power delivered to networks having the following input voltage and current:
 i) $v = 100 \sin(\omega t + 400)$ and $i = 20 \sin(\omega t + 800)$
 ii) $v = 150 \sin(\omega t - 700)$ and $i = 3 \sin(\omega t - 500)$ 2

- ✓ a) Explain the terms i) phasors, ii) phasor and impedance diagrams with suitable figures. 4
 b) For the circuit of following Figure: 3



- i) Calculate I , V_R , V_L , and V_C in phasor form. ii) Calculate the total power factor. iii) Calculate the average power delivered to the circuit. iv) Draw the phasor diagram. v) Obtain the phasor sum of V_R , V_L , and V_C , and show that it equals the input voltage E . vi) Find V_L and V_C using the voltage divider rule. 7
 8. a) What do you understand by resonant circuit? When a circuit is said to be in a state of resonance? Explain briefly. 2
 b) Define the quality factor Q of a series resonant circuit. Show that quality factor of a series resonant circuit is $Q_S = \frac{1}{R} \sqrt{\frac{L}{C}}$, where the symbols have their usual meaning. 3
 c) Given the parallel network in Fig. 8.1 composed of "ideal elements". Study the following: i) Determine the resonant frequency f_p . ii) Find the total impedance at resonance. iii) Calculate the quality factor, bandwidth, and cutoff frequency f_1 and f_2 of the system. 4

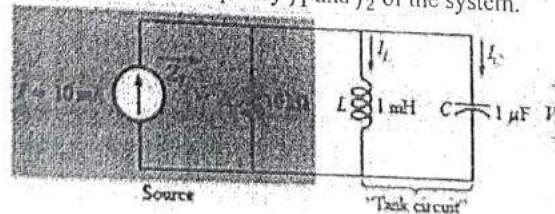


Fig. 8.1

Department of Information and Communication Engineering

Pabna University of Science and Technology

B.Sc. (Engineering) 1st Year 2nd Semester Examination-2019

Session: 2018-2019

Course Code: BBA-1201

Course Title: Industrial Management and Accountancy

- NB:
1. Answer any SIX (THREE from each PART) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 70

PART-A

1. a) Define management and managers and characterize their importance to contemporary organizations. $6\frac{2}{3}$
- b) Identify and briefly explain the four fundamental management functions in organizations. 5
2. a) Who are leaders? What is leadership? Describe different styles of leadership. 6
- b) Define motivation. Outline the motivation and performance relationship with a figure. $5\frac{2}{3}$
3. a) What is controlling and why it is important? $4\frac{2}{3}$
- b) Describe the three steps in the control process. 7
4. a) Show the differences between recruitment and selection. 4
- b) Describe the steps in the selection process. $7\frac{2}{3}$

PART-B

5. a) What is the basic accounting equation? 4
 - b) Define assets, liabilities and owner's equity. 3
 - c) What are the financial statements of business organization? $4\frac{2}{3}$
 6. a) What is accounting? 2
 - b) Identify the users of accounting information system. 3
 - c) Describe the objectives of accounting. $6\frac{2}{3}$
 7. a) What do you mean by transaction? Identify the nature of transactions. 4
 - b) Which events are transactions and which are not? $7\frac{2}{3}$
- In the business of Mr. Sohail, the following events took place-
- i. Mr. Sohail started business with tk. 50,000.
 - ii. He purchased goods with cash tk. 15,000.
 - iii. He has paid one of his creditors tk. 10,000.
 - iv. He has placed an order for purchasing goods worth tk. 8,000.
 - v. Made an expense for advertisement worth tk. 2,000.
 - vi. Mr. Mamun has appointed as manager in business for a monthly salary tk. 7,000.
 - vii. Withdrawn from business for his personal use tk. 3,000.
 - viii. Tk. 500 has stolen from his personal fund.
 - ix. Agreed to purchase goods from Hashem Brother's worth tk. 10,000 per month.
 - x. Sold goods to Hanif on account tk 10,000.
8. a) What are adjusting entries? Why and when adjusting entries are made? 4
 - b) How to correct the incorrect trial balance? 3
 - c) Why does a trial balance not contain up-to-date and complete financial information? $4\frac{2}{3}$

Department of Information and Communication Engineering

Pabna University of Science and Technology

B.Sc. (Engineering) 1st Year 2nd Semester Examination-2019

Session: 2018-2019

Course Code: ICE-1203

Course Title: Programming with C

- NB: 1. Answer any SIX (THREE from each PART) questions.
2. Figures in the right margin indicate marks.
3. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 70

PART-A

- | | | |
|----|--|---|
| 1. | a) What do you mean by main function? Briefly describe the different forms of main statement. | 3 |
| | b) Summarize the rules for naming identifiers. | 3 |
| | c) Write a program that will obtain the length and the width of a rectangle from the user and computes it's area and perimeter. | 2 |
| | d) What will be the output of the following program:
<pre>#include<stdio.h> int main() {int a=5, b=6; a+=b; printf("a=%d",++a);printf("b=%d",--b); return 0;}</pre> | 3 |
| 2. | a) Explain different types of format specifier in C programming language. | 3 |
| | b) Why and when do we use the #define and #include directive? | 2 |
| | c) Explain the different special operators. | 3 |
| | d) What is the difference between pre increment and post increment operators in C? What will happen if break statement is not used in switch case in C? | 3 |
| 3. | a) What is an array? How to initialize an array? | 2 |
| | b) What is the output of the following program?
<pre>#include<stdio.h> void main() { int i; char c[4][15]={ "PUST","C Programming","Data","Structure"}; for (i=0;i <4;i++) printf(" %s \n",c[i]); c[1][2]=c[0][3]; for (i=0;i <1;i++) printf(" %s \n",c[i]);}</pre> | 3 |
| | c) What do you mean by dynamic arrays? | 2 |
| | d) Explain the two-dimensional arrays with example. | 4 |

4. a) Why do we need a terminating null character? 2
 b) Define string with an example. Are strings data types? 2
 c) Write a program in C to check two strings if they are equal or not. Hints: Read two strings from keyboard, and compare. 4
 d) What are the use of functions 'strcpy()' and 'strlen()'? Give example. 2
 3 $\frac{2}{3}$
- PART-B**
5. a) What is modular programming? Write some characteristics of it. 3
 b) Distinguish between the following: (i) Automatic and Static variables 4
 (ii) & operator and * operator. 4
 c) What is prototyping? 2
 d) Write a recursive function that gets any positive integer and returns factorial. 2
 2 $\frac{2}{3}$
6. a) What is structure? How to copy and compare the structure variables? 4
 b) Describe the bit fields with suitable example. 4
 c) What do you mean by nested structures and array of structures? 4
 3 $\frac{2}{3}$
7. a) How to access the value of the variable using the pointer? 3
 b) Describe the relation between pointers and arrays. 3
 c) What do you mean by compatibility and casting? 3
 d) Write a function using pointers to exchange the values stores in two locations in the memory. 3
 2 $\frac{2}{3}$
8. a) How memory can be allocated dynamically in C? Give any example. 3
 b) How will you free memory after using it? Give example in C programming. 3
 c) Write a program in C to read a file until reaches 'EOF'. 3
 d) What is file? Why and when will you need to use a file? What steps should you follow to read and write a file? 3
 2 $\frac{2}{3}$

```
#include<stdio.h>
int fact( int n );
{
    return (if ==
        return fact - fact * n
    }
}
```

Department of Information and Communication Engineering

Pabna University of Science and Technology

B.Sc.(Engineering) 1st Year 2nd Semester Final Examination-2019

Session: 2018-2019

Course Code: ICE-1204

Course Title: Programming with C Sessional

Marks: 60

Time: 4 Hours

Group-C

Answer the FIVE selected questions

1. a) Write a program that reads any number and displays square root.
 b) Write a program that reads any number (x) and displays $\log_{10}(x)$.
 c) Write a program that reads mark and displays in division.
 d) Write a program that reads three numbers and displays the maximum.
 e) Write a program that reads three numbers and displays minimum.
 f) Write a program that reads any number and displays equivalent roman number.
 g) Write a program to calculate the sum of: $1+3+5+7\dots$ up to n^{th} term.
 h) Write a program that reads any decimal number and displays equivalent octal number.
 i) Write a program that reads two numbers and displays bitwise exclusive OR.
2. a) Write a program to form the pyramid:

1		
2	2	
3	3	3

 b) Write a program to form the pyramid:

		1			
	1	2	1		
	1	2	3	2	1

 c) Write a program that reads two numbers (x, r) and displays " p_r ".
 d) Write a program that reads two numbers (x, r) and displays " c_r ".
 e) Write a program that an integer and displays whether it is prime or not.
 f) Write a program that prints prime numbers from 1 to n.
 g) Write a program that prints Fibonacci numbers up to first n terms.
 h) Write a program that verifies a number "n" is a Fibonacci number or not.
3. a) Write a program that adds and multiplies two matrices.
 b) Write a program that reads a line of text and displays in reverse order.
 c) Write a program write a program that reads your name and displays every character with one space in reverse.
 d) Write a program that reads a line of text and displays number of vowels, consonants, digits, spaces and other characters.
 e) Write a function that gets two positive integers returns n^{th} prime number.
 f) Write a function that sorts a string and reverses its characters.
 g) Write a function that sorts a string and converts it to upper case.
 h) Write a recursive function that gets any positive integer and returns factorial.
 i) Write a recursive function that returns n^{th} Fibonacci number.
4. a) Write a program that reads and sorts an array using bubble sort in descending order.
 b) Write a program that reads some players name, team name, batting average and display team information.
 c) Write a program that reads all numbers in a file and writes another file in descending order.
 d) Write a program that reads and multiplies two numbers using pointer.
 e) Write a program that reads two numbers and returns remainder using pointer.
 f) Write a program that displays two floating point numbers and returns maximum using pointer.
 g) Write a program that reads two double values and displays maximum using pointer.
 h) Write a program that displays the frequency of every character in a file.

Department of Information and Communication Engineering

Pabna University of Science and Technology

Faculty of Engineering and Technology

B.Sc. (Engineering) 1st Year 2nd Semester Examination-2018

Session: 2017-2018

Course Code: ICE-1205

Course Title: Circuit Theory and Analysis

NB: 1. Answer any SIX (THREE from each PART) questions.

2. Figures in the right margin indicate full marks.

3. Parts of the same question should be answered together and in the same sequence.

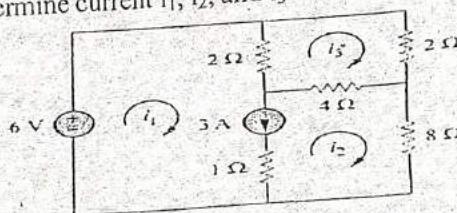
4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Total Marks: 70

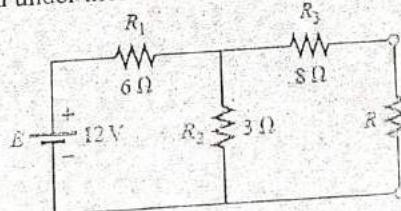
Time: 3 Hours

PART-A

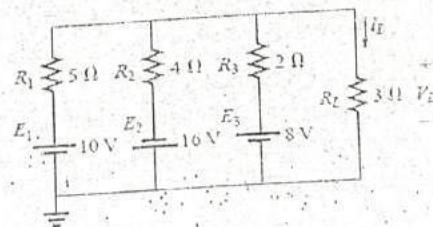
- 1. a) Define the following terms: circuit, node, branch, and voltage source. 4
b) With suitable example explain short and open circuits. 3
c) What will happen if we connect: i) two or more voltage sources in parallel and, ii) two or 2
more current sources in series? $\frac{4}{3}$
- 2. a) Describe Supernode and Supermesh with example. $\frac{3}{3}$
b) Use mesh analysis to determine current i_1 , i_2 , and i_3 4



- c) For circuit analysis which is better between mesh and nodal analysis? State logic for your 2
opinion.
d) What do you mean by source transformation? 2
- 3. a) Why do we need to study network theorems? 3
b) Write the steps of Mesh Analysis Procedure. 3
c) For the network of Figure below, determine the value of R for maximum power to R, and 3
calculate the power delivered under these conditions.



- d) State and Explain Thevenin's theorem with necessary circuit. $\frac{2}{3}$
 $\frac{3}{3}$
 $\frac{5}{5}$
- 4. a) State and explain Substitution theorem with necessary figures. 2
b) Using Millman's theorem, find the current through and voltage across the resistor R_L of 4
following figure: $\frac{2}{3}$

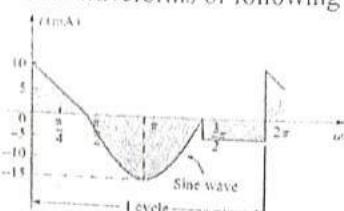


- c) State Norton's and Superposition theorems. 2

PART-B

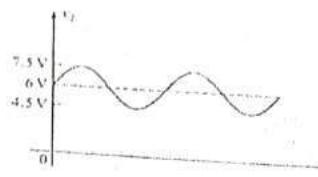
5. a) Briefly explain general format for the sinusoidal voltage and current.
 b) Define the terms: Instantaneous value, Lagging waveform, Leading waveform, Phase relationship.
 c) Find the average value of the periodic waveforms of following Figure over one full cycle.

2



- d) What do you mean by rms value? Find the rms value of the following waveform.

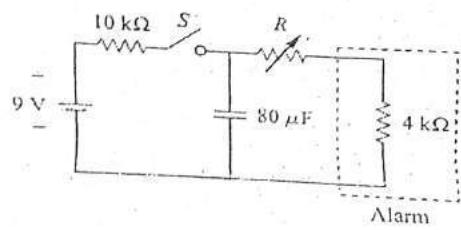
$\frac{2}{3}$



6. a) What is time constant? Derive charging and discharging equation of a capacitor.
 b) The RC circuit is designed to operate an alarm which activates when the current through it exceeds $120 \mu\text{A}$. If $0 \leq R \leq 6\text{k}\Omega$, find the range of the time delay that the circuit can cause.

6

$\frac{2}{3}$



7. a) Explain the terms: (i) Resistance, (ii) Inductive Reactance and (iii) Capacitive Reactance.
 b) Define admittance and susceptance. Briefly explain voltage divider rule for ac circuit.
 c) Consider the following Figure:

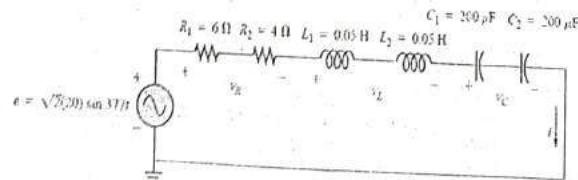
2

$\frac{2}{3}$

3

3

6



Calculate I , V_R , V_L , and V_C in phasor form, total power factor, average power delivered to the circuit. Draw the phasor diagram. Obtain the phasor sum of V_R , V_L , and V_C , and show that it equals the input voltage E . Find V_R and V_C using the voltage divider rule.

8. a) Explain Selectivity of series resonance circuit.
 b) For series resonant circuit deduces the expression $BW = \frac{f_s}{Q_s}$, where f_s is resonance frequency and Q_s is quality factor.
 c) A series R-L-C circuit is designed to resonate at $\omega_s = 10^5 \text{ rad/s}$, have a bandwidth of 0.15 ω_s , and draw 16 W from a 120-V source at resonance. i) Determine the value of R . ii) Find the bandwidth in hertz. iii) Find the nameplate values of L and C . iv) Determine the Q_s of the circuit. v) Determine the fractional bandwidth.

2

$\frac{2}{3}$

5

3

2

$\frac{4}{3}$

Department of Information and Communication Engineering

Pabna University of Science and Technology

Faculty of Engineering and Technology

B.Sc. (Engineering) 1st Year 2nd Semester Examination-2018

Course Code: ICE-1201 Course Title: Analog Electronics

- NB: 1. Answer any **THREE** questions out of four from each **PART**.
 2. Figures in the right margin indicate full marks.

3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of **PART-A** and **PART-B**.

Total Marks: 70

Time: 3 Hours

PART-A

1. a) Explain the operation of transistor as an amplifier. 4
 b) Draw a small signal hybrid equivalent circuit of CE transistor amplifier and derive expression for current gain, 5
 voltage gain and input impedance. 2 $\frac{2}{3}$
 c) A transistor amplifier employs $4k\Omega$ as collector load, if the input resistance is $1k\Omega$ determine the voltage gain. Given $\beta=100$, $g_m=10mA/V$ and signal voltage = $50mV$. 8 $\frac{2}{3}$
2. a) Draw the circuit of class B push-pull amplifier and explain its operation. Derive an expression for its maximum efficiency. 3
 b) Define and explain the following terms as applied to power amplifiers:
 (i) Collector efficiency, (ii) Distortion, and (iii) Power dissipation capability. 3
3. a) Discuss the different methods of coupling of amplifier stages and write the advantages and disadvantages. 6 $\frac{2}{3}$
 b) With a neat circuit diagram explain the working principle of a transformer coupled transistor amplifier. 2
 c) An 8Ω speaker is match to an amplifier so that the effective load resistance is $8k\Omega$. What should be the transformer turn ratio? 5
4. a) What do you mean by positive and negative feedback? What are the effects of negative feedback on bandwidth and distortion? 6 $\frac{2}{3}$
 b) Derive the expression for input resistance R_{if} and output resistance R_{of} of a voltage series feedback. 2 $\frac{2}{3}$

PART-B

5. a) What are the differences between amplifier and oscillator? 5
 b) Briefly explain the operation of a RC phase shift oscillator with suitable diagram. 4
 c) The ac equivalent circuit of a crystal has $L=1H$, $C=0.01pF$, $R=1000\Omega$ and $C_m=20pF$. Calculate f_s and f_p of the crystal. 3
6. a) What are the advantages of integrated circuit over conventional circuit? What are their drawbacks? 4 $\frac{2}{3}$
 b) Explain how a transistor can be constructed in a monolithic integrated circuit. 4
 c) Write a short note on i) epitaxial growth and ii) etching. 2 $\frac{2}{3}$
7. a) Define Slew rate and CMRR. 6
 b) What is an Op-amp? Derive the equation of voltage gain for non-inverting Op-amp. 3
 c) Write down the applications of Op-amp. 2
8. a) What is an active filter? Write advantages of it. 2
 b) What do you know about order of a filter? 2
 b) Explain the operation of active band pass filter with neat circuit diagram. 4 $\frac{2}{3}$
 c) A band pass filter has lower cutoff and upper cutoff frequencies of 20 KHz and 22.5 KHz respectively. What are the bandwidth, center frequency and Q? 3

Department of Information and Communication Engineering

Pabna University of Science and Technology

Faculty of Engineering and Technology

B.Sc. (Engineering) 1st Year 2nd Semester Examination-2018

Session: 2017-2018

Course Code: BBA-1201

Course Title: Industrial Management and Accountancy

NB: 1. Answer any SIX (THREE from each PART) questions.

2. Figures in the right margin indicate full marks.

3. Parts of the same question should be answered together and in the same sequence.

4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Total Marks: 70

Time: 3 Hours

PART-A

- | | | |
|-------|--|----------------|
| 1. a) | Define management. | 2 |
| b) | Describe the management process with a figure. | 5 |
| c) | Describe the ten management roles identified by Minzberg. | $4\frac{2}{3}$ |
| | | 3 |
| 2. a) | What are the sources of motivation? | 4 |
| b) | How work motivation related to employee performance? | $2\frac{2}{3}$ |
| c) | Describe the two-factor theory of work motivation. | $4\frac{1}{3}$ |
| | | 3 |
| 3. a) | Identify different kinds of managers by level and areas in the organization. | 6 |
| b) | Briefly describe the managerial skills needed to be successful Manager. | $5\frac{2}{3}$ |
| | | 2 |
| 4. a) | Define leadership? | 4 |
| b) | What are the sources of leadership power? | $5\frac{2}{3}$ |
| c) | Describe the different Leadership styles. | 2 |

PART-B

- | | | |
|-------|--|----------------|
| 5. a) | What is transaction | 2 |
| b) | What are the features of transactions | 4 |
| c) | Which events are transactions and which are not is explained by the following examples-
In the business of Mr. Rahman, the following events took place- | $5\frac{2}{3}$ |
| | 1. Mr. Rahman started business with tk.50,000.
2. He purchased goods with cash tk.15,000.
3. He has paid one of his creditors tk.10,000.
4. He has placed an order for purchasing goods worth tk.8,000.
5. Made an expense for advertisement worth tk. 2,000.
6. Mr. Mamun has appointed as manager in business for a monthly salary tk.7,000.
7. Withdrawn from business for his personal use tk. 3,000.
8. Tk.500 has stolen from his personal fund.
9. Agreed to purchase goods from Hashem Brother's worth tk.10,000 per month.
10. Sold goods to Hanif on account tk.10,000. | |
| | Whether these events are transaction or not? Explain with reason. | 4 |
| 6. a) | What is human resource management? Why it is important? | 3 |
| b) | How does an organization identify and select competent employees? | 2 |
| c) | Which functions are related to providing the employee with needed skills and knowledge?
How to retain the competent and high performing employees? | $4\frac{1}{3}$ |

7. a) What is accounting equation?
b) The transactions listed below are those of the Hasan Traders for the month of January 2019.

Transactions:

1. Mr. Hasan has started business bringing in Tk. 50,000 as Capital.
2. Furniture bought for business Tk. 5,000.
3. Employees salary paid off Tk. 6,000
4. Goods Purchase Tk. 20,000
5. Tk. 25,000 is deposited into Bank.
6. Goods sold Tk. 18,000
7. Cheque paid for advertisement Tk. 7,000
8. Commission received Tk. 3,000.
9. Interest received from bank Tk. 1,200.
10. Goods sold on credit Tk. 15,000.
11. Cheque paid for rent Tk. 6,000
12. Tk. 8,000 has withdrawn from bank for business.

Required: Prepare the Journal entries to record the transactions for January 2019.

8. a) What is taxation?
b) Describe the Canons of Taxation

$\frac{2}{3}$

$\frac{3}{3}$

$\frac{2}{3}$

61
Department of Information and Communication Engineering
Pabna University of Science and Technology

Faculty of Engineering and Technology
 B.Sc. (Engineering) 1st Year 2nd Semester Examination-2018

Session: 2017-2018

Course Code: Eng-1201

Course Title: Fundamental English

- NB:
1. Answer any **SIX** (THREE from each PART) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the question of PART-A and PART-B

Total Marks: 70

Time: 3 Hours

PART- A

- | | |
|---|-------|
| <p>1. Fill in the gaps using right form of verbs.</p> <ol style="list-style-type: none"> i) It is high time you ___ (stop) smoking. ii) While ___ (pass) the garden Karim saw a snake. iii) No sooner we ___ (enter) into the classroom than the class ___ (start). iv) I ___ (decide) my aim yet. v) He described as if he ___ (saw) everything. vi) Had I had the wings of a bird, I ___ (fly) in the sky. vii) I ___ (attend) the programme if you informed me. viii) You had rather ___ (went) home. ix) It is really long since we ___ (meet). x) Rahim along with his friends ___ (come) to visit this place regularly. xi) There ___ (be) a lot of trees in our campus. | 11.67 |
| <p>2. a) Write one synonym for each following words and make sentences with them:
 i. Bonanza ii. Origin iii. Authentic iv. Charming v. Prepared</p> | 5 |
| <p>b) Transform the following sentences as directed:
 i. She told me to go there. (Passive) ii. No one is as honest as he. (Superlative)
 iii. If you had been present, he would not have come. (Simple) iv. He is only Seven. (Negative)
 v. If I were there! (Assertive) vi. I am your son. (Complex)</p> | 6.67 |
| <p>3. a) Write an authorization letter to your friend, Mahathir, who is to collect your certificate from your university.
 b) Write a notice on your leave, as you, an English lecturer, are going to suspend some classes.</p> | 6.67 |
| <p>4. a) Complete the following sentences.</p> <ol style="list-style-type: none"> i) He is not only my brother ii) The old lady was so weak that iii) He studied seriously so that iv) No sooner had we gone out..... v) Since the weather was bad..... vi) They lost the match because of vii) The sailors were too thirsty to..... viii) Inspite of having merits, | 8x1=8 |
| <p>b) Make sentences with the following idioms (any four).
 Apple of discord; At sixes and sevens; In black and white; Wild goose chase; Burning question</p> | 3.67 |

PART-B

- .5. a) What is report? What are the structural elements of a Newspaper report? 4
b) Suppose you are the university correspondent of 'The Daily Times'. Prepare a report on celebration of The Pohela Boishakh 1426 in your university. 7.67
- .6. Read the following image and write a paragraph is not more than 250 words: 11.67
- 
- .7. a) What are the purposes of writing CV? 3
b) Suppose you are Azmol Shifar/ Maria Sultana, an ICE graduate. Write a cover letter to the Managing Director, Soft Tech (a reputed software farm), 32/6, Bonani, Dhaka expressing your interest to join the farm as an Executive Engineer and attach your CV. 8.67
- .8. Write dialogues for the following situation: 11.67
i. At a viva voce, introduce yourself.
ii. A gossip with two of your friends on ICT day celebration.
iii. A discussion on fire problem with two fire brigade officers.

(1)

Department of Information and Communication Engineering
 Pabna University of Science and Technology
 Faculty of Engineering and Technology
 B.Sc. (Engineering) 1st Year 2nd Semester Examination-2017
 Course Code: Eng-1201 Course Title: Fundamental English

S/1
TUE-30

- NB: 1. Answer any SIX (THREE from each PART) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Full Marks: 70

Time: 3 Hours

PART-A

5

1. a) Change the parts of speech as directed and make sentences with the new words:

- i. Pride(adj.)
- ii. Ignore(noun)
- iii. Ionotonous (noun)
- iv. Essential (adverb)
- v. Western(verb)

$6\frac{2}{3}$

- b) Transform the following sentences as directed: (any seven)

- i. The reported man is a terrorist. (Complex)
- ii. Radisson is one of the most expensive restaurants. (Simple)
- iii. The Martin is a very beautiful bird. (Exclamation)
- iv. I am sure that you will pass the examination. (Compound)
- v. He is the wisest person in the locality. (comparative)
- vi. Alas! Our leader is dead. (Assertive)
- vii. Mitu is the best girl in the class. (Comparative)
- viii. They admitted their guilt. (Complex)

5

2. a) Rewrite the following sentences using the right form of verbs: (any five)

- i. His father (die) last year. ~~with a dead~~
- ii. We should have (study) well. ~~ie~~
- iii. They (reach) by this time.
- iv. The color of his eyes (be) blue. ~~is~~
- v. It (snow) since last night.
- vi. Scarcely he (see) the police when he ran away. ~~he~~ 's e v y
- vii. He did nothing but (sing).

$3\frac{2}{3}$

- b) Fill in the gaps with appropriate prepositions : (any four)

- i. Police are him. ~~at~~
- ii. Rana is good english ~~in~~
- iii. Add five six.. ~~of~~
- iv. Don't boast your wealth.
- v. The cat jumped the wall.

3

- c) Make appropriate WHI questions of the following sentences: (any three)

- i. The campus is very far.
- ii. Samir visited America last year.
- iii. Bina lives in Pabna.

4

3. a) Transform the following sentences: (any four)

- i. Everybody loves a trustworthy person. Negative)
- ii. How happy they were! (Assertive)
- iii. You have to talk carefully. (Imperative)
- iv. No other child in the daycare center is as quite as Nabil. (Superlative)
- v. Completing the work, we went home. (Compound)
- vi. No one can act like this. (Interrogative)

4

- b) Choose whether each sentence needs an article or leave the blank:

- i. My sister is dentist.
- ii. Nazrul is..... Shelly of Bangladesh.
- iii. It was unwise decision
- iv. He paid.....visit to our college.

2

- c) Make your own sentences with the following:

- i. hanker after, ii. Pros and cons, iii. at stake, iv.a dark horse.

$3\frac{3}{3}$

4. a) Correct the following sentences:
- I feel comparatively better today.
 - The weather of Cox's Bazar is very healthy.
 - His choice of words is good.
 - They made two goals.
 - The little boy sank.
 - I saw him to go.
 - You should go home directly.

- b) Combine the following parts and make relevant sentences:

Part A	Part B
i. Patriotism is	a. even his own life for good of his country.
ii. It is a powerful sentiment and	b. courage and strength.
iii. A patriot can sacrifice	c. love for one's country.
iv. It is an idealism that gives	d. narrow-minded and selfish.
v. False patriotism makes man	e. wholly unselfish and noble

PART-B

5. Read the passage carefully & answer the questions that are given below:

People think of poverty, as a great evil, and it seems to be an accepted belief that, if people had plenty of they would be happy and useful and get more out of life. As a rule, there is more genuine satisfaction in life, and more obtained from life in a humble cottage of the poor men than in the palaces of the rich. I always pity the sons and daughters of rich men who are attended by servants and have governesses at a large stage; at the same time, I am glad to think they do not know what they have missed. It is because I know how sweet and happy and pure the home of honest poverty is, how free from perplexing cares and from social envies and jealousies - how loving and united members are in the common interest of supporting the family. It is for these reasons that from the ranks of the poor so many strong eminent self-reliant men have always sprung must always spring. If you read the best of the immortals, who were born not to die, you will find that the most of them have been born poor.

- a) Answer the following questions:

- What is the accepted belief about poverty?
- How, According to the author, is the home of the honest poverty?
- How does the author congratulate poor man's house?

- b) Change the words as directed and make sentences with them:

Free (into noun), Congratulate (into noun), Reason (into adjective), Eminent (into noun),
Sympathies (into adjective)

- c) Make a précis of the passage above.

6. a) What are the techniques of writing a paragraph? Explain with examples.

- b) Write any one paragraph of the following topics:

- The role of Students in the Social Reconstruction.
- Public and Private universities.
- Smoking in open places.

7. Suppose Pabna University of Science and Technology (PUST), Bangladesh is seeking application for the post of Lecturer in the Department of ICE. Now Write a cover letter to Registrar, PUST, Bangladesh and attach a CV of you.

8. Write an Essay on any one of the following:

- Unemployment problem in Bangladesh
- The gifts of Science
- Video game addiction

5

3

 $5\frac{2}{3}$

3

5

 $2\frac{1}{3}$ $2\frac{2}{3}$ $11\frac{2}{3}$

2

Department of Information and Communication Engineering

Pabna University of Science and Technology

Faculty of Engineering and Technology

BSc(Engineering) 1st Year 2nd Semester Examination 2017

Session: 2016-2017

Course Code: ICE-1201

Course Title: Analog Electronics

NB: 1. Answer any **SIX** questions (Three from each PART).

2. Figures in the right margin indicate full marks.

3. Parts of the same question should be answered together and in the same sequence.

4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Total Marks: 70

Time: 3 Hours

PART-A

- | | |
|--|-------------------------------|
| <p>✓ 1. a) Define amplifier.</p> <p>b) Show that the output voltage of a single stage common emitter amplifier is 180° out of phase with the input current.</p> <p>c) Draw d.c. load line with suitable diagram and necessary mathematics.</p> <p>d) Define the following terms:
 (i) Operating point, (ii) Cut off point, (iii) Saturation point, and (iv) Active region.</p> | 1
3
$3\frac{2}{3}$
4 |
| <p>✓ 2. a) What do you mean by power amplifier? Write the differences between voltage and power amplifier.</p> <p>b) Draw the circuit of class A push-pull amplifier and explain its operation.</p> <p>c) A class-A transformer coupled power amplifier has zero signal collector current of 50mA. If the collector supply voltage is 5V. Find (i) the maximum a.c. power output (ii) d.c. power input and (iii) the maximum collector efficiency.</p> | 3
$5\frac{2}{3}$
3 |
| <p>✓ 3. a) Discuss the different methods of coupling of amplifier stages.</p> <p>b) With neat circuit diagram explain the working principle of RC coupled transistor amplifier.</p> <p>c) Why does RC coupling give constant gain over mid frequency range??</p> | $6\frac{2}{3}$
2 |
| <p>4. a) Define feedback with example.</p> <p>b) Describe the effect of negative feedback on bandwidth, input impedance and output impedance..</p> <p>c) An amplifier with a $1k\Omega$ input resistance and a $50k\Omega$ output resistance has a voltage gain of 40. The amplifier is now modified to provide a 10% negative voltage feedback in series with the input. Calculate
 (i) Voltage gain with feedback
 (ii) Input resistance with feedback
 (iii) Output resistance with feedback.</p> | 6
4
$1\frac{2}{3}$ |

PART-B

- | | |
|--|--------------------------|
| <p>5. a) What is an oscillator? Discuss the advantages of oscillator.</p> <p>b) Draw the circuit diagram of Hartley oscillator and explain its operation.</p> <p>c) Find the operating frequency of a transistor Hartley oscillator if $L_1=100\mu H$, $L_2=1mH$, mutual inductance between coil $M=20\mu H$ and $C=20pF$.</p> | 6
3 |
| <p>6. a) What are the advantages of integrated circuit over conventional circuit?</p> <p>b) Describe the fabrication process of monolithic integrated circuits.</p> <p>c) Explain how isolation between components is obtained in an IC.</p> | $4\frac{2}{3}$ |
| <p>7. a) What is an operational amplifier? Define CMRR.</p> <p>b) What is characteristic of Ideal OPAMP? Draw the differentiator and integrator Operational Amplifier Circuits including their tasks.</p> <p>c) Which OPAMP don't have feedback loop?</p> | 4
6
$1\frac{2}{3}$ |
| <p>8. a) Discuss the different types of filter response.</p> <p>b) With circuit diagram explain the operation of active high pass and low pass filter.</p> <p>c) A band pass filter has center frequency of 50kHz and a Q of 20. What are the cutoff frequencies?</p> | 3
$5\frac{2}{3}$
3 |

- NB: 1. Answer any **SIX** questions (Three from each PART).
 2. Figures in the right margin indicate full marks.

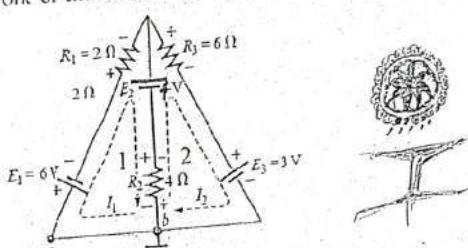
3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Total Marks: 70

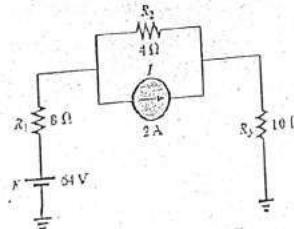
Time: 3 Hours (For Part A and Part B)

PART-A

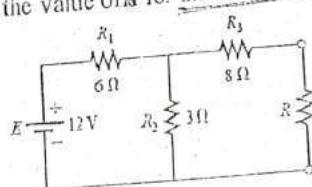
1. a) Define the following terms: Circuit, Linear Network, Bilateral Element, Mesh, and Loop. 4
 b) With suitable example explain power distribution in a DC circuit. 3
 c) What will happen if we connect: i) two or more voltage sources in parallel and, ii) two or more current sources in series? 2
 3
2. a) Write the steps of Branch Current Analysis Procedure. 4
 b) Find the branch currents of the network of the following Figure using mesh analysis. 4



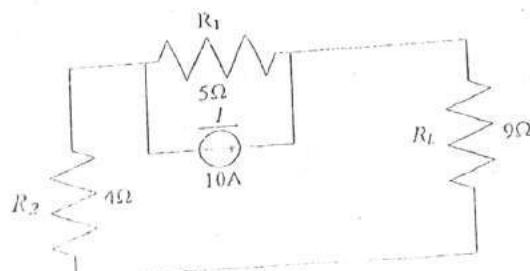
- c) Apply nodal analysis to the network of the following Figure to find nodal voltages and current through each resistance. 2
 3



3. a) Why do we need to study network theorems? 2
 b) State and explain superposition theorem with suitable circuit diagram. 6
 c) For the network of Figure below, determine the value of R for maximum power to R , and calculate the power delivered under these conditions. 3

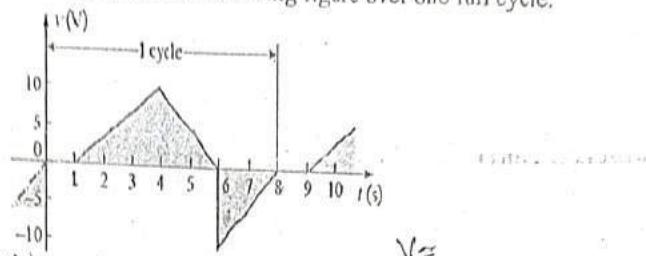


- A. a) State and explain Millman's theorem with necessary figures. 5
 b) Find the Norton equivalent circuit for the network external to the R_L . Also find power dissipated by R_L . 6
 3

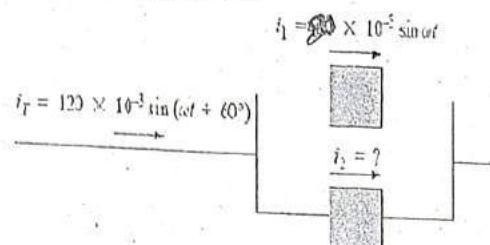


PART-B

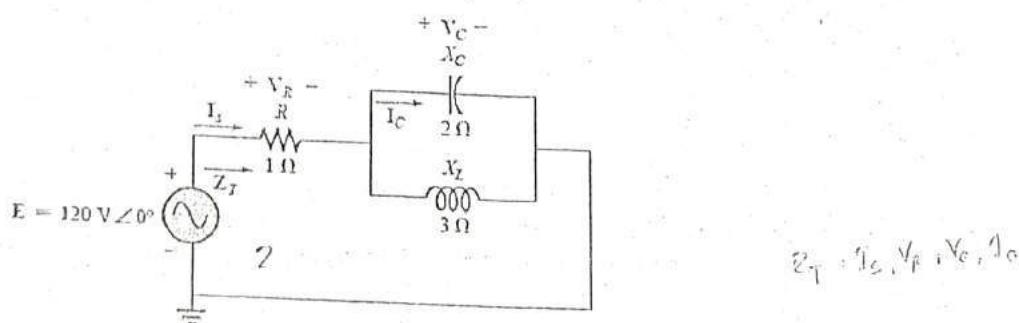
5. a) What do you mean by alternating waveform? Explain it with suitable examples. Write the reasons for studying alternating waveforms. 2
 b) Define the terms: Peak amplitude, Lagging waveform, Leading waveform, Phase relationship; and RMS value. 3
 c) Find the average value of the periodic waveforms of following figure over one full cycle. 3



- d) i) Determine the angle at which the magnitude of the sinusoidal function $v = 10 \sin 377t$ is 4 V. 2
 ii) Determine the time at which the magnitude is attained. 3
 6. a) Deduce the expression for average power delivered to a load for sinusoidal voltage and current. 5
 b) Briefly explain power factor. Why it is necessary. 3
 c) Determine the current i_2 for the following network. 2



7. a) Define (i) Phasor (ii) Power factor (iii) Apparent power and (v) Reactive power 4
 b) Find Z_T , I_s , V_R , V_C , I_C Power factor, draw phasor and impedance diagram 5



- c) How power factor can be corrected? 2
 8. a) Define resonance and selectivity. 2
 b) For series resonant circuit, derive the equation for resonant frequency. 5
 c) A series R-L-C circuit is designed to resonate at $\omega_s = 10^5$ rad/s, have a bandwidth of 0.15 ω_s , and draw 16 W from a 120-V source at resonance. 4
 i) Determine the value of R. 2
 ii) Find the bandwidth in hertz. 2
 iii) Find the nameplate values of L and C. 2
 iv) Determine the Q_s of the circuit. 2
 v) Determine the fractional bandwidth. 2

Pabna University of Science & Technology
B.Sc.(Engineering) 1st Year 2nd Semester Final Examination-2017
Session: 2016-2017, 2015-2016, 2014-2015

Course Code: ICE-1203

Time: 3 Hours (For Part-A and Part-B)

Course Title: Programming With C

Full Marks: 70

- NB: 1. Answer any **SIX**(THREE from each PART) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

PART-A

1. a) What do you mean by main function? Briefly describe the different forms of main statement. 3

b) Describe the four basic data types. How could we extend the range of values they represent? 4

c) Find and explain the output of the following program: 2

```
void main(){
    int a=5,b=15,r,s;
    r=a<8;
    s=(a<10) && (b==12);
    printf("r=%d, s=%d",r,s);}
```

d) Write a program that will obtain the length and width of a rectangle from the user and computes its area and perimeter. $2\frac{2}{3}$

2. a) How would you decide the use of one of the three loops in C for a given problem? 3

b) Write down the four steps of a conventional looping process. How can we use for loops when the numbers of iterations are not known? 4

c) What do you mean by switch statement? 2

d) Write a program to find the number of and sum of all integers greater than 100 and less than 200 that are divisible by 7. $2\frac{2}{3}$

3. a) What do you mean by array in C? How to declare a multidimensional array in C? 4
 Give example.

b) There are two matrixes A and B of size 5×5 . Write a C program that will add A and B and store the result in A. $3\frac{2}{3}$

c) What conditions must be satisfied by all the elements of any given array? 2

d) Can entire arrays be processed with single instruction without repetition? 2

4. a) What is string? Describe it's basic structure. 3
 b) Explain the string-handling functions with examples. 4
 c) Describe the limitations of using `getchar` and `scanf` functions for reading strings. 2
 d) Write a program that reads a string from the keyboard and determines whether the string is a palindrome or not. $2\frac{2}{3}$

PART-B

5. a) What is modular programming? Write some characteristics of it. 3
 b) Define function. Explain different parts of function. 4
 c) Write down the scope rules. 2
 d) Write a program that uses a function to sort an array of integers. $2\frac{2}{3}$

6. a) How to copy and compare the structure variables? 3
 b) Describe the union with suitable example. 3
 c) How does a structure differ from array? 2
 d) Write a program to illustrate the comparison of structure variables. $3\frac{2}{3}$

7. a) How pointers and arrays are closely related? What are the advantages of using pointer? $3\frac{2}{3}$

- b) What will be output of the following code: 6

```
void function1(int *p, int *q, int *r, int *s);
main() {
    int a, b, c, d, *x, *y;
    a=20, b=50, x=&d; y=&c; c=25, d=300;
    printf("Before calling %d %d %d %d \n", a, b, *x, *y);
    func1(&c, &d, &d, &b);
    printf("After calling %d %d %d %d \n", a, b, *x, *y);
    getch();
}

void function1(int *x1, int *x2, int *x3, int *x4)
{
    *x1=100; *x2=200; *x3=300; *x4=400;
}
```

- c) If a variable is a pointer to a structure, then which operator is used to access data members of the structure through the pointer variable? Give example. 2

8. a) What is file? Explain the procedure of defining and opening a file with examples. 5
 b) Distinguish between the `feof` and `ferror`. 3
 c) Write a program to copy the contents of one file into another. $3\frac{2}{3}$

Department of Information and Communication Engineering
Pabna University of Science and Technology, Pabna
Faculty of Engineering and Technology
B.Sc. (Engineering) 1st Year 2nd Semester Final Examination 2017
Session: 2016-2017, 2014-2015

Course Code: BBA-1201

Course Title: Industrial Management and Accounting

- NB:
1. Answer any **SIX (THREE** from each part) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of Part-A and Part-B.

Part-A (Industrial Management):

1. a) State the essential features of partnership.
b) Describe the requisites of an ideal partnership.
c) Discuss the procedure for the formation and registration of a partnership
2. a) What is training & Development? Differences between Training & Development
b) Discuss the importance of training.
3. a) What is Personnel Management? Discuss the Features of Personnel Management.
b) Narrate the Purpose of Personnel Management.
4. a) Define Recruitment? Discuss the objectives of recruitment.
b) Describe the process of Recruitment.

Part-B (Accounting):

5. a) What is Accounting. State its importance.
b) Describe the functions of accounting.
c) What is accounting equation? State the different elements of an accounting equation.
6. a) What is meant by Transaction?
b) Mrs. Nargis started her legal practitioner business on January 1, 2016. The transactions of the first month were as follows: Show the Effects of transactions over the elements of Accounting Equation
Jan 1 Invested tk. 5000 in her business
Jan 2 Paid the rent for the month of January tk. 300
Jan 7 Machine purchase on credit worth tk. 1500
Jan 10 Legal services given to the clients for cash tk. 600
Jan 15 Paid salary to the office staff tk. 200
Jan 20 Loan taken from the bank tk. 2000
Jan 24 Legal services provided to the clients on credit tk. 700
Jan 29 Dues for machine purchase paid tk. 1000

(1) (2) (3) (4)

7.

a) Describe the advantage of cash book

7.

v) S N Prokousuli is a furniture shop owned by S. N Babu. During the month of December 2013, following transactions took place:

*V.P.L.T.
-7/6/14*
3
3
8

Dec.	1	Cash in hand Tk. 50,000 and cash at Bank Tk. 10,000 (cr.).
"	2	Goods (Timber) purchased by cheque Tk. 4,000.
"	3	Tk. 40,000 deposited to Bank.
"	4	Received a cheque from sale of goods Tk. 60,000.
"	7	Withdraw from Bank Tk. 3,000.
"	10	Cash from Bills receivable received by Bank Tk. 20,000.
"	13	Cheque received from debtor Sayed Tk. 8,000.
"	20	Purchased computer Tk. 60,000 in cheque.
"	26	Withdraw by the owner Tk. 10,500.
"	31	Bank allowed interest Tk. 5,000.

Required: Record the transactions in the double column Cash Book and calculate the amount of cash & bank balance at the last date of the month.

8. a) How debit and credit are determined?

2
2
3
9

b) Asa Lata started her own consulting firm, Lata Consulting, on June 1, 2012. The following transactions occurred during the month of June:

1. June- Lata invested Tk. 3,80,000 cash in the business
2. Purchased office equipment for Tk. 1,20,000 on account
3. Performed Tk. 40,400 of services on account
4. Purchased various supplies for Tk. 10,500 on account
5. Paid Tk. 5,000 for office rent for the month
6. Paid Tk. 500 to advertise in The Daily Star
7. Received a cash payment of Tk. 30,400 for services provided on June 3
8. Paid Tk. 10,000 employee salaries for the month
9. Received a cash payment of Tk. 15,000 for services provided
10. Paid Tk. 1,500 for utilities
11. Withdrawn Tk. 2,000 for personal use

Required:

1. Prepare a tabular analysis of the July transactions. The column heading should be as follows:

Date	Assets					Liabilities	+ Owners' Equity
	Cash	+ Accounts Receivable	+ Supplies	+ Office Equipment	= Accounts Payable		
							Asa Lata's Capital

2. Prepare an Income Statement, Owner's Equity Statement for the month of June, 2012 and a Balance Sheet on June 30, 2012.

45-45-45

610

Pabna University of Science and Technology
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2017
Session: 2016-2017, 2015-2016, 2014-2015

Course Code: Math-1201

Course Title: Integral calculus and Differential Equations

- NB:**
1. Answer any **SIX** (**THREE** from each **PART**) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of **PART-A** and **PART-B**.

PART-A

1. a) Integrate the following:

~~(i)~~ $\int \frac{dx}{(e^{x-1})^2}$

~~(ii)~~ $\int \sqrt{\frac{x}{a-x}} dx$

~~(iii)~~ $\int \frac{dx}{(2x+1)\sqrt{4x+3}}$

~~(iv)~~ $\int \tan^{-1} \left(\frac{1+\cos x}{\sin x} \right) dx$

11
2
 $\frac{2}{3}$

2. a) What do you mean by integration?

b) Evaluate: i) $\int \frac{dx}{a+b\cos x}$

ii) $\int \frac{2\sin x + 3\cos x}{3\sin x + 4\cos x} dx$

c) Show that $\int_0^{\pi/2} \frac{dx}{(x-3)\sqrt{x+1}} = \frac{1}{2} \log \frac{5}{3}$

2
7
4

3. a) State and prove the fundamental theorem of integral calculus.

b) Evaluate: $\lim_{n \rightarrow \infty} \left[\frac{1}{n} + \frac{\sqrt{n^2-1^2}}{n^2} + \frac{\sqrt{n^2-2^2}}{n^2} + \dots + \frac{\sqrt{n^2-(n-1)^2}}{n^2} \right]$

c) Show that $\int_0^{\pi/2} \sin^4 \theta \cos^6 \theta d\theta = \frac{3}{512} \pi$

4
3
 $\frac{2}{3}$

4. a) Write down the properties of definite integral.

b) Evaluate: $\int_0^{\pi/4} \log(1 + \tan \theta) d\theta$

c) Find the area of the segment cut off from $y^2 = 4x$ by the line $y = x$.

PART-B

5. a) State and prove the necessary and sufficient condition for a differential equation of first order and first degree to be exact.

2
 $\frac{2}{3}$

b) Solve: $x \cos x \frac{dy}{dx} + y(x \sin x + \cos x) = 1$

4

c) Solve: $x \left(\frac{dy}{dx} \right) + y \ln y = x y e^x$

2
 $\frac{2}{3}$

6. a) What is Bernoulli equation?

5

b) Identify and solve $\frac{dy}{dx} + y = x y^3$.

5

c) Define integrating factor. Solve $(x^2 + 1) \frac{dy}{dx} + 4xy = x; y(2) = 1$.

2
 $\frac{2}{3}$

7. a) Define higher order homogeneous DE with constant coefficient.

5
 $\frac{2}{3}$

b) Solve: $\frac{d^2y}{dx^2} - 2 \frac{dy}{dx} - 3y = 2e^x \sin x$.

5

c) Solve $(x^2 + 1)y'' - 2xy' + 2y = 0$, given $y = x$ is a solution. Find a linearly independent solution by reducing the order.

6

8. a) Solve: $\frac{d^2y}{dx^2} + y = 3x^2 - 4 \sin x$, by using method of undetermined coefficient.

2
 $\frac{2}{3}$

b) Solve $y'' + 3y' + 2y = \frac{1}{1+x^2}$, by the method of variation of parameter.

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Department of Information & Communication Engineering

Pabna University of Science & Technology, Pabna

Faculty of Engineering and Technology

B.Sc. Engineering 1st Year 2nd Semester Examination-2014

Course Code: ICE-1201

Course Title: Analog Electronics

- NI:
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

- PART-A**
1. a) What do you mean by distortion in amplifier? How many types of distortion exist in amplifier? $2\frac{2}{3}$
b) Draw a small signal hybrid equivalent circuit of CE transistor amplifier and derive expression for current gain, voltage gain and input impedance. 5
c) A common emitter transistor amplifier is driven by a voltage e_s of internal resistance $R_s = 800\Omega$. The load impedance $R_L = 2000\Omega$. The parameters are $h_{ie} = 1100\Omega$, $h_{re} = 2.5 \times 10^{-4}$, $h_{ce} = 50$, $h_{oe} = 25\mu\text{A/V}$. Compute current gain, voltage gain and input impedance. 4
 2. a) What do you mean by power amplifier? Classify power amplifiers. 4
b) Show that the collector efficiency of a transformer coupled class A power amplifier is 50%. 5
c) Discuss the merits of push pull amplifiers. $2\frac{2}{3}$
 3. a) What do you understand by multistage transistor amplifier and why it is needed? 3
b) Explain the working principle of two-stage RC coupled amplifier with diagram. $5\frac{2}{3}$
c) A multistage amplifier consists of four stages; the voltage gain of the stages are 60, 30, 100 and 160. Calculate the overall voltage gain. 3
 4. a) Distinguish between positive and negative feedback. 3
b) Explain negative feedback with respect to non-linear distortion and input impedance. $5\frac{2}{3}$
c) An amplifier has a gain of 2×10^5 without feedback. Determine the gain if negative voltage feedback is applied. Given: $\beta = 0.04$. 3



Page 1 of 2

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2014
Course Code: ICE-1201
Course Title: Analog Electronics

- Hints:**
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

- | PART-B | |
|---------------|--|
| 1. a) | Explain the operation of tank circuit with net diagram. 4 |
| b) | What do you understand by damped and undamped electrical oscillations? Illustrate your answer with examples. 3 |
| c) | With neat diagram, explain the action of Phase Shift oscillator. 3 |
| 2. a) | What is multivibrator? What are the differences among the three types of multivibrator? 3 |
| b) | Explain the circuit operation of astable multivibrator. 2 |
| 3. a) | Why Op-amp is called as operational amplifier? 2 |
| b) | Draw the circuit diagram of a non-inverting operational amplifier and explain its operation. 3 |
| c) | For a non-inverting amplifier given that input voltage is 3V and $R_f = 1K\Omega$ and $R_i = 10K\Omega$. Calculate its output voltage. 3 |
| 4. a) | Define active and passive filters. Write some advantages of filter. 4 |
| b) | Explain High pass active filter with suitable diagram. 3 |
| c) | Calculate the output voltage from the non-inverting amplifier circuit shown in Fig. 1 for an input of $120 \mu V$. 3 |



Fig. 1

$$V_{out} = V_{in} \times \frac{R_f}{R_i} = 120 \mu V \times \frac{20k\Omega}{10k\Omega} = 240 \mu V$$

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2014
Course Code: ICE-1203
Course Title: Programming with C

- NB:**
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For PART-A and PART-B)

Total Marks: 35

PART-A

1.
 - (a) Explain basic structure of C programs.
 - (b) Write the steps of executing C programs. Draw a flow chart for compiling and running a C program.
 - (c) Define Keywords and Identifiers. Write the rules for Identifiers.
 - (d) What is data type? How many classes of data types in C? Explain them.

 2.
 - a) Write the difference between "%s" and "%[]" for reading strings with suitable example.
 - b) Write the output of the following program: void main(){
 char an[20] = "ICE PUST 11001";
 printf("%s\n", an);
 printf("%20s\n", an);
 printf("%20.10s\n", an);}
 - c) If m is an integer variable, then write the difference between ++m and m++ , m- - and -m .
 - d) Write a program to count and print the number of negative and positive numbers in a given set of numbers. Test your program with a suitable set of numbers. Use scanf to read the numbers.

 3.
 - a) Briefly explain if, if-else, switch and goto statements.
 - b) What will be the output of the following programs:

(i) char suite = 3; switch(suite){ { case 1: printf("\n Diamond"); case 2: printf("\n Spade"); default: printf("\n Heart"); } printf("\n I thought one wears a suite");	(ii) char ch ='a'; switch(ch){ { case 'a': case 'b': printf("\n You entered b"); case 'A': printf("\n a is in ashar"); }
--	---

 4.
 - a) What is the difference between while and do-while statement?
 - b) Define array. What will happen if in a C program you assign a value to an array element whose subscript exceeds the size of array?
 - c) Determine which of the following valid identifiers are. If invalid, explain why?
 - i) a + b
 - ii) long
 - iii) int
 - iv) 3RD
 - d) Write down a complete C program that performs the following-
 - i. Define an array called grades of size 20 and type int.
 - ii. Read 20 different values inside the array using scanf. The reading process should be done using loop. The values should be in the range of 0 to 100 inclusive.
 - iii. Calculate the average value of grades.
 - iv. Calculate the highest grade.
- Do not use functions in the above program, only the main function.

Page: 1 of 2

7/6

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
Faculty of Engineering and Technology
BSc. Engineering 1st Year 2nd Semester Examination-2014
Course Code: ICF-1203
Course Title: Programming with C

NB:

1. Answer any THREE questions out of four.
2. Figures in the right margin indicate marks.
3. Parts of the same question should be answered together and in the same sequence.
4. Separate answer script must be used for answering the questions of PART-B.

Time: 3 Hours (For PART-A and PART-B)

Total Marks: 35

PART-B

- | | | |
|----|--|---|
| 1. | a) How will you differ function from user-defined function? Why user-defined functions are used in C? | 1 |
| | b) What are meant by the terms 'Call by value' and 'Call by reference'? | 3 |
| | c) With an example briefly explain C function declaration, function call and function definition. | 3 |
| | d) Define 'Recursive Function'. With suitable example briefly explain the following functions
i) Strcmp() and ii) strcmpi(). | 5 |
| 2. | a) What is null character? Why do we need a terminating null character?
b) Find the output of the following programs | 2 |
| | (i)
<pre>void main() { static int i=5; if (-i) { printf("\t%d",i); main(); } }</pre> | 4 |
| | (ii)
<pre>main() { int x=10, y=20, p, q; p=add(x,y); q=add(x,y); printf("p=%d, q=%d",p,q); } int add (int a,int b) { a+=a; b+=b; return a; return b; }</pre> | 3 |
| c) | Write a program to compute the value of e ^x using following series | 2 |
| | $e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots$ | 5 |
| | Your program must have two functions without main() function. One for calculating power and another for calculating factorial. | |
| 3. | a) What are the storage classes? Discuss all storage class using example.
b) Write a C program to add two matrices and display the entered matrices and resultant matrix. | 6 |
| 4. | a) What is the relationship between the data item represented by a variable v and the corresponding pointer variable pv?
b) What is a structure? How does a structure differ from an array?
c) Write a C program to store all even numbers to a file even.txt and all odd numbers to a file odd.txt from 1 to N. | 3 |
| | | 3 |
| | | 3 |

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2014
Course Code: ICE-1205 Course Title: Circuit Theory and Analysis

BB

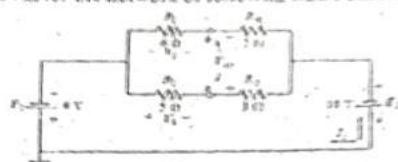
- 1. Answer any THREE questions out of four.
- 2. Figures in the right margin indicate marks.
- 3. Parts of the same question should be answered together and in the same sequence.
- 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For PART-A and PART-B)

Total Marks: 35

PART-A

1. a) Describe the series and parallel circuits with example.
 b) Find the voltages V_1 , V_2 , and V_{ab} for the network of following figure and also calculate the source current I_s .

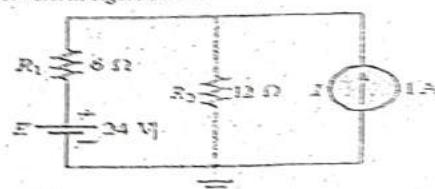


- c) Explain open circuit and short circuit with suitable example.

3
2

2. a) What is current source? Explain the branch-current method with example.
 b) Apply the nodal analysis to the network in figure below:

6
2

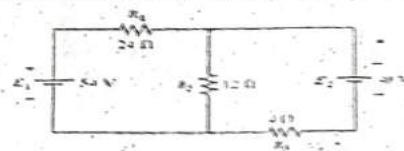


3. a) State and explain Norton's Theorem with example.

6

- b) Using superposition theorem, determine the current through the 4-ohm resistor in the following figure:-

2
3



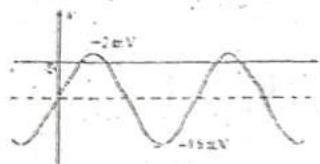
4. a) Mention phase relationship between a sine wave and a cosine wave. Draw the sinusoidal wave forms of the following set in case of phase relation.

2
3

$$i = 15 \sin(\omega t + 60^\circ)$$

$$v = 10 \sin(\omega t - 20^\circ)$$

- b) Give the concepts of average value with suitable example. Determine the average value of the following waveform.



- c) Define the following terms of sinusoidal waveforms:

4

- i) Peak amplitude ii) periodic waveform iii) cycle iv) frequency.

$$\frac{2 \times 2 - 2 \times 16}{2 \times 8}$$

$$\frac{4_1 - 52}{2 \times 8}$$

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination - 2014
Course Code: ICE 1205 Course Title: Circuit Theory and Analysis

- NB:**
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For PART-A and PART-B)

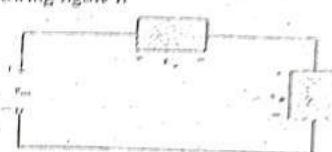
Total Marks: 35

PART-B

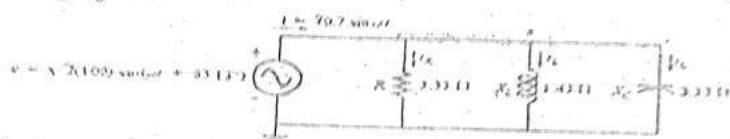
1. a) Explain the phenomena of magnetic field produced in magnetic material.
 b) Draw the hysteresis curve for hard and soft magnetic material.
 c) State Ampere's circuital law. Calculate the magnetic flux ϕ for the magnetic circuit of the following figure.



2. a) Explain frequency response of basic R, L and C elements.
 b) Define average power and power factor. Determine the average power delivered to networks having the following input voltage and current:
 i) $v = 100 \sin(\omega t + 40^\circ)$ and $i = 20 \sin(\omega t + 70^\circ)$
 ii) $v = 150 \sin(\omega t - 20^\circ)$ and $i = 3 \sin(\omega t - 30^\circ)$
- c) Define Phasor. Find the input voltage of the circuit of following figure if
 $V_o = 50 \sin(377t + 30^\circ)$ $f = 60\text{Hz}$
 $V_o = 30 \sin(377t + 60^\circ)$

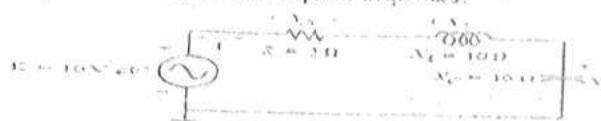


3. a) Define reactance and susceptance. Briefly explain current divider rule for ac circuit.
 b) Consider the following Figure:



Change the following network in phasor notation. Find Y_L , Z_L , I , I_R , I_L , I_C , power, power factor and Draw admittance and impedance diagram.

- c) Explain impedance and phasor diagram for inductive and capacitive reactances.
- d) a) Explain Selectivity of series resonance circuit.
 b) For series resonant circuit deduces the expression $BW = \frac{f_0}{Q_0}$, where f_0 is resonance frequency and Q_0 is quality factor.
 c) i. For the series resonant circuit of following Figure find I , V_R , V_L , and V_C at resonance.
 ii. What is the Q of the circuit?
 iii. If the resonant frequency is 6000 Hz, find the bandwidth.
 iv. What is the power dissipated in the circuit at the half-power frequencies?



Department of Information & Communication Engineering,
Pabna University of Science & Technology, Pabna
 Faculty of Engineering and Technology
 B.Sc. Engineering 1st Year 2nd Semester Examination-2014
 Course Code HUM-1201
 Course Title: Financial Accounts and Economic Analysis

- NB:
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

- PART-A**
- | | | |
|----|---|---|
| 1. | a) "Every transaction is an event; every event is not a transaction"-Explain. | 4 |
| b) | Discuss the principles or characteristics of double entry system | 5 |
| c) | Explain the accounting equation. | 2 |
| | | 2 |
| 2. | a) Explain the method of calculating debit credit for different accounts. | 3 |
| | b) Mr. Mahim is a businessman. During the month of January 2015, the following transactions took place. | 8 |
| | January 1 started business with cash tk. 250000, machinery tk. 65000 and tk. 25000 as loan. | 3 |
| | January 3 purchased furniture tk. 3000 | |
| | January 5 purchased goods on credit tk. 20000 | |
| | January 11 office rent paid in advance tk. 5000 | |
| | January 14 loan taken from the bank tk. 50000 | |
| | January 17 Mr. Mahim personal expenses paid from the business tk. 10000 | |
| | January 20 sold goods to Mahdi for cash tk. 5000 | |
| | January 24 withdrawn from bank tk. 40000 | |
| | January 25 charged depreciation of furniture tk. 5000 | |
| | January 27 purchases return tk. 5000 | |
- Record the above transactions in the General Journal Book.
3. Sharmin Aktar Shila is a businessman. During the month of March 2015, the following transactions took place.
- | | | |
|----------|--|------------------|
| March 1 | cash in hand tk. 50000 and bank overdraft tk. 20000 | 11 $\frac{2}{3}$ |
| March 3 | purchased goods by cheque tk. 30000 | |
| March 5 | Received a cheque from sale of goods tk. 7000 | |
| March 11 | Withdraw from bank tk. 4000 | |
| March 14 | Cash from bills receivable received by bank tk. 3000 | |
| March 17 | Cheque received from debtor Sayed tk. 7000 | |
| March 20 | Purchase furniture in cash tk. 4000 and tk. 2000 in cheque | |
| March 24 | Withdraw by the proprietor tk. 2500 | |
| March 25 | Bank allowed interest tk. 500 | |

Record the transactions in the double column cash book and calculate the amount of cash and bank balance at the last date of the month.

4. a) ABC Industries Ltd. is the manufacturer of moonlight torches. The following data relate to manufacture of torches during the month of April, 2015:
- | | |
|------------------------|--------------------------|
| Raw materials consumed | Tk. 28000 |
| Direct wages | Tk. 15000 |
| Machine-hour worked | 9500 hours |
| Machine-hour rate | Tk 2.50 |
| Office overheads | 20% of works cost |
| Selling overheads | Tk. 0.75 per unit |
| Units produced | 25620 |
| Units sold | 21600 @ Tk. 7.0 per unit |

Prepare Cost Sheet showing the cost and the profit per unit and the total profit earned.

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
 Faculty of Engineering and Technology
 B.Sc. Engineering 1st Year 2nd Semester Examination-2014
 Course Code: MATH-1201
 Course Title: Integral Calculus and Differential Equations

- NB:
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

PART-A

1. a) Do you agree with the statement "Integration is the converse of derivative"? If so, then justify your answer by geometrically. 2 $\frac{2}{3}$
 b) Evaluate the following integration (any three): 9
~~i) $\int \frac{dx}{(2x+3)\sqrt{x^2+3x+2}}$ ii) $\int \frac{dx}{5+4\cos x}$ iii) $\int \sqrt{(x-\alpha)(\beta-x)}dx$ iv) $\int \frac{2\sin x + 3\cos x}{3\sin x + 4\cos x} dx$~~
2. a) State the fundamental theorem of calculus. If $I_n = \int_0^{\pi/4} \tan^n \theta d\theta$, show that $I_n = \frac{1}{n-1} - I_{n-2}$. 4
 b) Evaluate $\lim_{n \rightarrow \infty} \left[\frac{n}{n^2+1^2} + \frac{n}{n^2+2^2} + \frac{n}{n^2+3^2} + \dots + \frac{n}{n^2+n^2} \right]$ 4
 c) Show that $\int_0^{\pi/2} \frac{\sqrt{\sin x}}{\sqrt{\sin x + \sqrt{\cos x}}} dx = \frac{\pi}{4}$ 3 $\frac{2}{3}$
3. a) Define Beta and Gamma function. Show that Beta function is symmetric. 6
 b) Prove that $[(n+1) = n] [n = n!]$; all symbols are means usual notation. 3
 c) Evaluate $\int_0^{\pi/2} \sin^6 \theta d\theta$ by Gamma function. 2 $\frac{2}{3}$
4. a) Define: Degree, Order, Linear & non-linear ordinary differential equation. Give an example of each. 6
 b) Find area common to the cardioid $r = (1 + \cos \theta)$ and the circle $r = \frac{3}{2}a$. 4 $\frac{2}{3}$
 c) Solve: $(x-y)^2 \frac{dy}{dx} = a^2$; $y(0) = 2$. 3

Department of Information & Communication Engineering

Pabna University of Science & Technology, Pabna

Faculty of Engineering and Technology

B.Sc. Engineering 1st Year 2nd Semester Examination-2014

Course Code: ICE-1207(2013-2014), ICE-1206(2012-2013)

Course Title: Applied Electricity and Magnetism

- NB:
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

PART-A

1. a) State and explain Gauss's law. 3 $\frac{2}{3}$
b) Deduce Coulomb's law from Gauss's law. 4
c) Find an expression for the magnitude of the electric field E at a distance r in front of a sheet having surface charge density σ . 4
2. a) Define electric lines of force. How does the imaginary lines of force relate with electric field vector? Draw the pattern of lines of force for two equal positive charges. 3
b) Calculate electric field strength E due to an electric dipole at point P , a distance r along the perpendicular bisector of the line joining the charges of the dipole. 4 $\frac{2}{3}$
c) What is electric charge? Two charges are $q_1 = +3.0 \times 10^{-4}$ micro coulombs and $q_2 = 1.0 \times 10^{-6}$ coulombs are placed 20 cm apart. At what point on the line joining the two charges is the electric field strength zero? 4
3. a) What is cylindrical capacitor? Calculate the capacitance of a cylindrical capacitor. 4
b) What do you mean by parallel connection of resistors? Calculate the equivalent resistance of five resistors when they are connected in parallel between two terminals across the same seat of emf. 4
c) What is Resistivity? A rectangular carbon block has dimensions 2.0 cm \times 2.0 cm \times 100 cm. What are the resistances i) Between two square faces and ii) Between two rectangular faces? 3 $\frac{2}{3}$
4. a) State and explain Faraday's law. Electromagnetic induction. 4
b) Explain with necessary diagrams how mutually induced emf is induced in a coil. 4 $\frac{2}{3}$
c) Show the relation between self inductance and mutual inductance. 3

Department of Information & Communication Engineering
 Pabna University of Science & Technology, Pabna
 Faculty of Engineering and Technology
 B.Sc. Engineering 1st Year 2nd Semester Examination - 2014
 Course Code: ICE-1207(2013-2014), ICE-1206(2011-2013)
 Course Title: Applied Electricity and Magnetism

NB:

1. Answer any THREE questions out of four.
2. Figures in the right margin indicate marks.
3. Parts of the same question should be answered together and in the same sequence.
4. Separate answer script must be used for answering the questions of PART-B.

Time: 3 Hours (For Part A and Part B)

	Part-B	Total Marks: 35
1. a)	State and explain Ampere's law.	3 ² 3
b)	Explain the operation of a moving coil galvanometer.	6
c)	What is Lorentz force?	2
2. a)	What do you mean by time constant of an RC circuit? A series RC circuit with $10\text{ k}\Omega$ resistance requires 0.01 seconds of charging a capacitor up to 63.2% of the maximum supplied voltage. Find the value of capacitor?	4
b)	From the circuit given below find the expression for the transient current I when the switch S is in position 1 and then in position 2.	7 ¹ 1
3. a)	What is transformer? Establish the relation among the primary and secondary voltage, current and number of turns of a transformer.	4
b)	Deduce the condition for maximum efficiency of a transformer.	4
c)	A solenoid has an inductance of 50 H and a resistance of 50Ω . If it is connected to a 50 volt battery how will it take for the current to reach one-half of its final value?	3 ² 3
4. a)	Describe the construction and working principle of a transformer.	6 ² 3
b)	Why is transformer rating in KVA?	1
c)	A 200 KVA, 6600V/400V, 50 Hz single phase transformer has 80 turns on the secondary. Calculate: (i) approximate value of primary turns, (ii) approximate value of primary and secondary current, and (iii) the maximum value of flux.	4

(b)

Ex 9 March
Department of Information and Communication Engineering

Pabna University of Science and Technology, Pabna

Faculty of Engineering and Technology

B.Sc. Engineering 1st Year 2nd Semester Examination 2016

Session: 2015-16

Course Code: ICE-1205

Course Title: Circuit Theory and Analysis

- NB:
1. Answer any **THREE** questions out of four from each **PART**.
 2. Figures in the right margin indicate full marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of **PART-A** and **PART-B**.

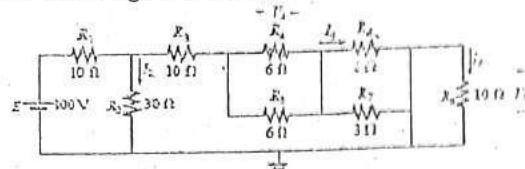
Time: 3 Hours (For Part A and Part B)

Total Marks: 70

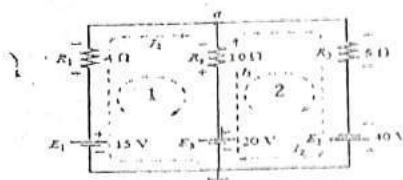
PART-A

1. a) Describe the series and parallel circuit with example. 4
- b) Compare the characteristics of a dc current source with those of a dc voltage source. How are they similar and how are they different? 3
- c) For the following figure: 2
 $\frac{4}{3}$

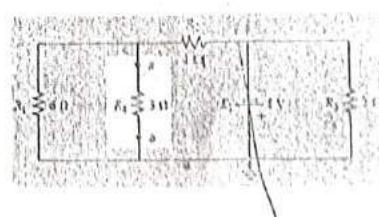
- i) Find the currents I_2 , I_6 , and I_8 .
- ii) Find the voltages V_4 and V_8 .



2. a) Explain the nodal analysis with example. 7
- b) Apply branch-current analysis to the network of the following figure: $\frac{4}{3}$



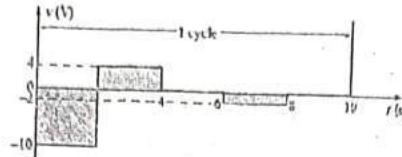
3. a) State Maximum Power Transfer Theorem and explain it with example. 5
- b) State the Norton's Theorem. 2
- c) Find the Thévenin equivalent circuit for the network in the shaded area of the network of the following figure: 2
 $\frac{4}{3}$



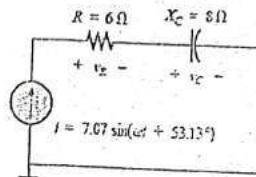
4. a) Explain the natural behavior of a first order RC circuit with proper diagram. 4
- b) How to generate AC in practical case? Draw the voltage equation for AC. 3
- c) Define active element, passive element and linear bilateral circuit. 3
 $\frac{3}{3}$

PART-B

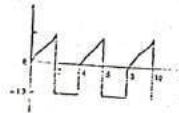
1. a) What do you mean by alternating waveform? Explain it with suitable examples. 2
- b) Define the following terms: (i) Waveform, (ii) Instantaneous value, (iii) Periodic waveform, and (iv) Cycle. 2
- c) Mention phase relationship between a sine wave and a cosine wave. Draw the sinusoidal wave forms of the following sets in case of phase relation. 4
 - (i) $i = 15 \sin(\omega t + 60^\circ)$
 $v = 10 \sin(\omega t - 20^\circ)$
 - (ii) $v = 10 \sin(\omega t + 30^\circ)$
 $i = 5 \sin(\omega t + 70^\circ)$
- d) Define average and effective (r.m.s) values. Calculate the r.m.s value of the voltage of the following Figure. 3 $\frac{2}{3}$



2. a) Explain response of basic L and C elements to a sinusoidal voltage or current with suitable figures. 5
- b) The voltage across a $1-\mu\text{F}$ capacitor is provided by $v = 30 \sin 400t$. What is the sinusoidal expression for the current? Sketch the v and i curves. 3
- c) Derive the general equation for average power delivered in a sinusoidal ac network. 2 $\frac{2}{3}$
3. a) Explain the terms: (i) Inductive Reactance and (ii) Capacitive Reactance. 2
- b) Define admittance and susceptance. Briefly explain current divider rule for ac circuit. 3 $\frac{3}{3}$
- c) For the circuit of following figure: 5



- (i) Calculate Z_T , E , V_R , and V_C in phasor form, (ii) Draw the phasor and impedance diagram, (iii) Calculate the total power factor, and (vi) Find V_R and V_C using the voltage divider rule.
4. a) Why is an inductor or a capacitor not an energy storing device? 3
- b) Calculate the RMS value of current for the following wave shape. If the current is passed through 2Ω resistor, find the average power absorbed in the resistor. 5



- c) Draw the phasor diagram for the following two cases: i) R and L are in series with a parallel combination of C , ii) R , L and C are in series with a condition: $X_L < X_C$, where X_L and X_C have their usual meaning. 3 $\frac{2}{3}$

Department of Information and Communication Engineering
Pabna University of Science and Technology, Pabna
Faculty of Engineering and Technology
B.Sc. (Engineering) 1st Year 2nd Semester Examination-2016
Session: 2015-2016

Course Code: BBA-1201 Course Title: Industrial Management and Accountancy

- N.B:**
1. Answer any SIX (Three from each PART) questions.
 2. Figures in the right margin indicate full marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 70

PART-A

- | | |
|--|--------------------------|
| 1. a) Define Management according to Henri Fayol. Discuss the functions of the management process.
b) State the Principles of Management. | 6
2
$5\frac{2}{3}$ |
| 2. a) What is Personnel Management? Briefly discuss the purpose of Personnel Management.
b) Write functions are to be performed by the HRM department of the organization? | 2
$5\frac{2}{3}$
6 |
| 3. a) Define Recruitment. Describe the Process of Recruitment.
b) Differentiate between Recruitment and Selection. | 6
$5\frac{2}{3}$ |
| 4. a) Why planning is given so much importance in managerial function?
b) Classify plans according to the managerial levels.
c) Draw the diagram that shows the steps of planning. | 3
4
$4\frac{2}{3}$ |

PART-B

- | | |
|--|--|
| 5. a) Explain the feature of transaction.
b) Which events are transactions and which are not is explained by the following examples- In the business of Mr. Sohail, the following events took place- | 4
$7\frac{2}{3}$ |
| 1. Mr. Sohail started business with.....
2. He purchased goods with cash.....
3. He has paid one of his creditors.....
4. He has placed an order for purchasing goods worth.....
5. Made an expense for advertisement worth.....
6. Mr. Mamun has appointed as manager in business for a monthly salary.....
7. Withdraw from business for his personal use.....
8. Tk. 500 has stolen from his personal fund.
9. Agreed to purchase goods from Hashem Brother's worth Tk. 10,000 per month
10. Sold goods to Hanif on account..... | Tk. 50,000.
Tk. 15,000.
Tk. 10,000.
Tk. 8,000.
Tk. 2,000.
Tk. 1,000.
Tk. 3,000.
Tk. 10,000. |

Whether these events are transaction or not explained with reason.

6. a) Discuss the importance of Journal. *The above*
 b) Mr. Nila Chowdhury is a businessman. During the month of March 2011, the following transactions took place. *Journalizing transactions*

March 1 purchased goods.....	Tk. 9,000
" 2 purchased furniture.....	Tk. 12,000
" 3 sold goods to Bahar for cash.....	Tk. 15,000
" 7 deposited in the Bank.....	Tk. 8,000
" 9 purchased goods on credit.....	Tk. 5,000
" 12 withdrawn by the owner for personal requirement	Tk. 2,000
" 15 sold goods.....	Tk. 14,000
" 18 purchased stationary.....	Tk. 1,000
" 30 salaries paid to the employees.....	Tk. 7,000.

7. a) What is your concept regarding ledger? Distinguish between journal and ledger.
 b) From the following Ledger balance prepare Trial Balance as on 31 December 2016:

Name of accounts	Taka	Name of accounts	Taka	Name of accounts	Taka
Capital ✓	50,000	Drawings ✓	1,510	Depreciation ✓	2,115
Stock (1.1.14) ✓	24,600	Business expenses ✓	1,000	Rent received ✓	600
Sales ✓	71,200	Cash in hand ✓	1,000	Salary expense ✓	7,700
Gas & Water ✓	840	Cash at bank ✓	7,760	Insurance premium ✓	1,060
Land & Building ✓	20,000	Purchase ✓	31,960	Return inward ✓	500
Wages expense ✓	18,490	Tax & Rates ✓	900	Bills payable ✓	5,000
Debtors ✓	255,800	Furniture ✓	1,250	Creditors ✓	10,370
Commission ✓	1,470	Bill receivable ✓	1,470	Returns outward ✓	6,400
Equipment ✓	9,270	Cash ✓	6,700	Bank charge ✓	2,970
Transportation ✓	4,390	At Bank (1.1.16) ✓	29,300	Discount received ✓	90

8. a) What are the factors to be considered in preparing Trial Balance?
 b) To test the arithmetical accuracy of the accounts is the main objective of Trial Balance - comments.

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3

7,74,960
 Dr - 13,630
 D = 9,33,025

7/6
7/5
7/4
7/3
7/2
7/1

Department of Information and Communication Engineering
 Pabna University of Science and Technology, Pabna
 Faculty of Engineering and Technology
 B.Sc. Engineering 1st Year 2nd Semester Examination-2016
 Session: 2015-16

Course Code: Math-1201 Course Title: Integral Calculus and Differential Equations

- NB:
1. Answer any THREE questions out of four from each PART.
 2. Figures in the right margin indicate full marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 70

- | PART-A | |
|---|----------------|
| 1. a) Integrate the following: | 6 |
| (i) $\int \frac{dx}{x(x-1)^2(x^2+1)}$ (ii) $\int \sqrt{a^2 + x^2} dx$ (iii) $\int e^{ax} \sin bx dx$ | |
| b) What do mean by integration? Evaluate the integration: $\int \frac{1}{(e^x-1)^2} dx$. | $2\frac{2}{3}$ |
| c) Define beta and gamma function. | 3 |
| 2. a) Prove by summation $\int_a^b \sin x dx = \cos a - \cos b$. | 4 |
| b) Evaluate: $\lim_{n \rightarrow \infty} \left[\frac{1^2}{n^3+1^3} + \frac{2^2}{n^3+2^3} + \dots + \frac{n^2}{n^3+n^3} \right]$ | 4 |
| c) Prove that $\left[\frac{1}{2}\right] = \sqrt{\pi}$. | $3\frac{2}{3}$ |
| 3. a) Evaluate: $\int_0^{\pi/2} \frac{\sin^2 x}{\sin x + \cos x} dx$. | 4 |
| b) Show that $\int_0^1 \frac{\log(1+x)}{1+x^2} dx = \frac{\pi}{8} \log 2$. | $3\frac{2}{3}$ |
| c) If $I_n = \int_0^{\pi/4} \tan^n \theta d\theta$, then show that, $I_n = \frac{1}{n-1} - I_{n-2}$, and also find the value of $\int_0^{\pi/4} \tan^6 x dx$. | 4 |
| 4. a) Find the area of the segment cut off from $y^2 = 4x$ by the line $y = x$. | $3\frac{2}{3}$ |
| b) Obtain the intrinsic equation of the cycloid $x = a(\theta + \sin \theta), y = a(1 - \cos \theta)$, the fixed point being the origin. | 4 |
| c) The circle $x^2 + y^2 = a^2$ revolves round the x-axis, show that the surface area and the volume of the whole sphere generated are respectively $4\pi a^2$ and $(4/3)\pi a^3$. | 4 |

PART-B

- | | |
|--|----------------|
| 1. a) What do you mean by order and degree of the differential equation? Find the differential equation whose solution is $y = e^x(A \cos x + B \sin x)$. | 4 |
| b) Find the particular solution of $(1+x^3)dy - x^2ydx = 0$, satisfying the initial conditions $x=1, y=2$. | 3 |
| c) Solve: $\frac{dy}{dx} = (4x+y+1)^2$ | 4 |
| 2. a) Define linear differential equation and solve $(1+y^2)dx + (x - \tan^{-1}y)dy = 0$. | 4 |
| b) Solve: $\frac{dy}{dx} = \frac{x-2y-3}{2x+y-3}$. | $3\frac{2}{3}$ |
| c) Solve: $x(x^2+y^2-a^2)dx + y(x^2-y^2-b^2)dy = 0$. | 3 |
| 3. a) Define an exact differential equation. Find the necessary and sufficient condition for the exactness of the differential equation $Mdx + Ndy = 0$. | $4\frac{2}{3}$ |
| b) Solve: $(x^2+y^2+x)dx + xy dy = 0$. | 4 |
| c) Solve: $(D^3 - 13D - 12)y = 0$
$(D^3 - 13D - 12)Y = 0$ | 3 |

- b) Make your own sentences with the following idioms and phrases: (any six)
 Owing to; Look down on; Come to terms; Let loose; cast aside; hang around; Get tired of, out of the way; one in a million.
4. a) Write a short report on "Bad Pronunciation and fluency in English of the students of Pabna University of Science and Technology". $5\frac{2}{3}$
- b) Write a letter to the Editor of The Daily Morning Sun on 'Private Coaching' or 'Job opportunities in the Telecommunication sector in Bangladesh'. 6
- PART-B**
5. a) Put correct preposition of the following sentences. Please leave the place empty if there is NO PREPOSITION. (Any FIVE)
 i) Munich lies 530 meters sea level. ii) My brother's birthday isthe 5th November.
 iii) She was absent the conference two hours.
 iv) Don't worry it. Everything will be here.
 v) Are you very familiar that method? vi) I have been waiting o'clock.
- b) Transform the following question as directed (Any seven)
 i) Everyone will realize that I am right. (Negative)
 ii) Accustomed to rule, she schooled herself to be quite. (complex)
 iii) There is nothing wrong with me. (Interrogative)
 iv) I was saved because I had a good intention for everybody. (Compound)
 v) The sight of Teknaf is very charming. (Exclamatory)
 vi) Humayun Ahmed is the most popular writer in Bangladesh. (Comparative)
 vii) You should not pollute the environment. (Imperative)
 viii) An automatic train runs faster than a steam-train. (Positive)
6. a) Choose whether each sentence needs an article. Please leave the place empty if there is NO ARTICLE
 i) He asked me _____ very hard question.
 ii) _____ question that he asked me was easy.
 iii) Have you seen _____ my scarf? iv) Could you please pass me _____ salt?
 v) Is there _____ good restaurant around here? vi) _____ truck run over _____ old man.
- b) Fill in the blanks with the correct form of the verb given in the brackets
 Among the negative aspects there are issues to ... (i)...(ponder). Rapid change ... (ii)...(have) had a disruptive effect on social structures. Urban migration to the capital city has ... (iii)... (lead) to serious problems of congestion, land shortage, and water and air, pollution. Although a period of fast economic and social transformation... (iv)... (improve) the quality of life. There... (v)... (be) now evidence that the income inequalities both within and between regions and between rich and poor groups... (vi)... (wide)
7. a) Change the voice of the following sentences as directed
 i) He did for me the unnecessary things. (Passive)
 ii) He was needed for work at the university. (Active)
 iii) Nothing could stop her. (Passive) iv) He is called a fool. (Active)
- b) Make your own sentences with any Three of the following:
 i) A man of letters, ii) In actuality, iii) Far bound,
 iv) Hand in glove, v) To turn on, vi) Every level of
- c) Make appropriate wh-questions for the following answers (Any Five)
 i) The French revolution took place in 1789. ii) He comes to my house twice in a week.
 iii) I read The Daily Star daily. iv) They come to university by rickshaw.
 v) He drives my car. vi) The pen belongs to me.
8. a) Amplify the idea contained in any one of the following:
 i. Morning shows the Day. ii. A Rolling Stone Gathers no Moss
 iii. Sweet are the uses of Adversity.
 iv. Lives of Great Men all remind us we can make our Lives Sublime.
 v. The wages of sin is death. vi. The proper study of mankind is man.

Department of Information and Communication Engineering
Pabna University of Science and Technology, Pabna
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2016

Session: 2015-16

Course Code: ICE-1203 Course Title: Programming with C

- NB: 1. Answer any THREE questions out of four from each PART.
 2. Figures in the right margin indicate full marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 70

PART-A

1. a) What do you mean by computer program? What are the advantages of high level language? 3
 b) What are the characteristics of C? Is it a special purpose language? Explain. 0 3
 c) Consider a problem where you are given two positive integers. Your task is to add a value 10 with the smallest number and subtract 5 from the ~~smallest~~ largest number. Find their sum and check whether the sum is greater than the largest number. 5 2
 i) Write the algorithm steps. 3
 ii) Draw the flowchart. 3
 2. a) Describe the five arithmetic operators in C. Summarize the rules associated with their use. 5
 b) What is the output of the following program segment? 3

```
int i;
for (i=5; i<16; i++)
printf("%d\n", i, i, i);
```

c) Write a C program to find the first ten Fibonacci numbers. 3 3
 3. a) What is meant by operator precedence? Write down the relative precedence of arithmetic operators? - 2 2
 b) Find the output of the following code segments.

i. for (x=1; x<10; x++); printf("%d", x);	ii. for (x=1; x>10; x++) printf("%d", x); printf("%d", 10);
iii. for (x=1; x<10; x++) printf("%d", x);	

 c) What is the difference between while and do-while statement? 4
 d) Write a C program to find the Least Common Multiple (LCM) of two integer numbers using Greatest Common Divisor (GCD). Your program must have a function named *find_gcd* that accept two integer numbers and return the greatest common divisor to the main. 4
 4. a) Compare the use of the switch statement with the use of nested if-else statements. Which is more convenient? 4
 b) What is a logical error? How do logical error differ from syntactic and execution errors? 3 3
 c) Write a C program that finds the factorial of positive integer from 0 to N, where N is a positive integer. For example if N = 3 output will be [0! = 1, 1! = 1, 2! = 2, 3! = 6]. 4
- PART-B**
1. a) What is recursion? What advantage is there in its use? 4
 b) What are formal and actual arguments? Explain the relationship between them. 2 3
 c) Write a program to calculate the average of a list of N numbers. Your program also finds the maximum number, minimum number and total even numbers. 5 3

2. a) How does a structure differ from array? How one can define and initialize a structure?
b) Describe briefly structure within structure with a proper example.
c) What is union? Show how different types of data share the same memory location.
3. a) Explain the four storage class specification included in C.
b) What is the purpose of the continue statement? Within which control statements can the continue statement be included? Compare with the break statement.
c) Write a C program to add two matrices using function. Your program display both entered matrices and resultant matrix.
4. a) Explain the purpose of the library function *f.eof*, *f.open* and *f.close*?
b) What is the relationship between an array name and a pointer? How is an array name interpreted when it appears as an argument to a function.
c) Write a C program to copy all text from one file to another file.

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3

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3

3
2
3
3
5

Pabna University of Science and Technology
 B.Sc. (Engineering) 1st Year 2nd Semester Examination-2019
 Session: 2018-2019

Course Code: ENG-1201

Course Title: Fundamental English

- NB:
1. Answer any SIX (THREE from each part) questions.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 70.

PART-A

1. Use the correct form of verbs. 11 $\frac{2}{3}$

- i. Runu along with her friends (to be) present in the seminar.
- ii. Since they (get) the information later, they had to use the back door.
- iii. While (enter) into the room, they saw a huge crowd.
- iv. In the seminar, the keynote speaker said that cleanliness (to be) a great virtue.
- v. He also said, "It is high time you (clean) your own campus."
- vi. At night Runu thought of (clean) her campus.
- vii. Next day she got the campus little bit (change).
- viii. No sooner had she crossed the Library building, she (see) all the friends together.
- ix. She jumped as if she (to be) in the paradise.
- x. A number of boys (to be) behind that great job.
- xi. If they knew the idea before, they (make) their campus more beautiful.

2. a) Transform the following sentences as directed. 5

- i. Everybody knows Humayun Ahmed. (Negative)
- ii. He is one of the greatest playwrights in Bangladesh. (Positive).
- iii. When he wrote *Kothao Keu Nei*, he got countrywide popularity. (Simple)
- iv. Despite being innocent, Mr. Baker faced death penalty. (Complex)
- v. What a great drama it was! (Assertive)

- b) Write an antonym for each of the following word and frame a sentence with it. 6 $\frac{2}{3}$

- i. Fertile ii. Frank iii. Obscure iv. Eternal v. Gallant vi. Gratify

3. a) Change the direct speech into indirect speech. 6 $\frac{2}{3}$

- i. Apurbo said to Mehjabin, "Have you attended the English class today?"
- ii. She said, "Yes, I attended."
- iii. He said to her, "Will you tell me the gist of it?"
- iv. She said, "The course teacher has suggested us to speak English all the time."
- v. He said, "Let us discuss on some issues in our free time."
- vi. She said to him, "It's a good idea."

- b) Convert the following words into different parts of speech as directed. 5

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna
Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2014
Course Code: HUM-1201
Course Title: Financial Accounts and Economic Analysis

NB:

1. Answer any THREE questions out of four.
2. Figures in the right margin indicate marks.
3. Parts of the same question should be answered together and in the same sequence.
4. Separate answer script must be used for answering the questions of PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

PART-B

1. a) What is an economic problem? Briefly describe the fundamental problems facing an economy. 4
b) What is an opportunity cost? How does the idea relate to the definition of economics? 2 $\frac{2}{3}$
c) What are the key elements of the scientific method and how does this method relate to economic principles and laws? 3
d) Why is money not considered to be a capital resource in economics? 2
2. a) What is law of demand? Explain with diagrammatic illustration and formulae. 7 $\frac{2}{3}$
b) Distinguish between the demand and quantity demanded. 4
3. a) What is supply? 2
b) Discuss the various determinants of supply. 3
c) Explain how equilibrium price is determined in a market economy? 2 $\frac{2}{3}$
4. a) Explain the meaning and significance of production and production function. 4
b) Explain the law of diminishing marginal utility. 7 $\frac{2}{3}$

Department of Information & Communication Engineering

Pabna University of Science & Technology, Pabna

Faculty of Engineering and Technology

B.Sc. Engineering 1st Year 2nd Semester Examination-2014

Course Code: ICE-1201

Course Title: Analog Electronics-I (Improvement)

- NB:
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A.

Total Marks: 35

Time: 3 Hours (For Part A and Part B)

PART-A

1. a) What is transistor? Why is it so called?
b) Explain the operation of transistor as an amplifier.
c) What do you mean by FET? Describe the working principle of a JFET.
2. a) What is the basic difference between D-MOSFET and E-MOSFET?
b) With neat circuit diagram explain the working principle of transformer coupled transistor amplifier.
c) Discuss the merits of push pull amplifier.
3. a) What is power amplifier? Briefly describe the block diagram of power amplifier.
b) Define the following terms as applied to power amplifier:
 - (i) Collector efficiency
 - (ii) Power dissipation capability
c) A class A power amplifier has a maximum a.c. power output of 30W. Find the power rating of the transistor.
4. a) Define feedback with example. Write some advantages of negative feedback.
b) Explain with example how negative feedback increases bandwidth?
c) Show that $A_f = \frac{I}{I + \beta A}$.

**Department of Information & Communication Engineering
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Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination-2014

Course Code: ICE-1201

Course Title: Analog Electronics-I (Improvement)

- NS:**
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

PART-B

- | | |
|---|---|
| 1. a) What is the difference between amplifier and oscillator? | 2 |
| b) Explain the circuit operation of colpitt oscillator and deduce its frequency of oscillation. | 3 |
| c) What do you mean by Barkhausen criterion for maintaining a steady level of oscillation? | 6 |
| 2. a) Define multivibrator. What is the basic difference among the three types of multivibrator? | 4 |
| b) Explain the functional diagram of astable multivibrator. | 4 |
| c) What is duty cycle? Obtain an equation of duty cycle for astable operation. | 3 |
| 3. a) What is an Op-amp? Why is it called Op-amp? | 4 |
| b) Define CMRR and slew rate for an Op-Amp. | 4 |
| c) Calculate the output voltage from the non-inverting amplifier circuit shown in Fig. 1 for an input of 120 μ V. | 3 |

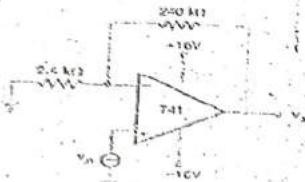


Fig. 1

- | | |
|---|---|
| 4. a) Define Hartley oscillator and voltage follower. | 3 |
| b) Briefly explain the operation of integrator and differentiator op-amp circuit. | 5 |
| c) For an inverting amplifier if the input voltages are 2V, 4V and 6V and corresponding resistances are 2K, 4K and 6K respectively and feedback resistor is 3K. Calculate the output voltage. | 3 |

Department of Information & Communication Engineering
Pabna University of Science & Technology, Pabna

Faculty of Engineering and Technology
B.Sc. Engineering 1st Year 2nd Semester Examination 2014

Course Code: MATH-1201

Course Title: Integral Calculus and Differential Equations

- N.B.**
1. Answer any THREE questions out of four.
 2. Figures in the right margin indicate marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 35

PART-B

- | | |
|---|---------------|
| 1. a) State and prove the necessary and sufficient condition for the exactness of the equation
$M(x,y)dx + N(x,y)dy = 0$. | $\frac{5}{3}$ |
| b) Solve $x(y^2 + 1)dx + y(x^2 + 1)dy = 0$ | 3 |
| c) Eliminate the constants from $y = ax + bx^2$ | 3 |
| Identify the type and Solve the following ODEs: | |
| a) $(6x - 2y - 7)dx = (3x - y + 4)dy$ | 4 |
| b) $(6xy + 2y^2 - 5)dx = (3x^2 + 4xy - 6)dy$ | 4 |
| c) $\frac{dy}{dx} - xy = x^2$ | $\frac{3}{2}$ |
| 3. a) Define Integrating factor (I.F.). Solve $(2x^2 + y)dx + (x^2y^2 - x)dy = 0$ by using I.F. | |
| b) i) $(D^2 - 9)y = e^{-3x} + e^{2x}$ by operator method | $\frac{4}{3}$ |
| ii) $y_2 + y = \tan x$ by variation of parameter method | 7 |
| 4. a) Find the power series solution of the equation $(z^2 + 1)y'' + xy' - xy = 0$ in powers of x (i.e. about $x = 0$). | |
| b) Find the family of orthogonal trajectories of $y = cx^2$. | 3 |

4. a) Using Cauchy-Euler method, find the general solution of the differential equation

$$x^3 \frac{d^3y}{dx^3} - 4x^2 \frac{d^2y}{dx^2} + 8x \frac{dy}{dx} - 8y = 4\ln x.$$

- b) Solve the homogeneous linear system by using matrix method:

$$\frac{dx_1}{dt} = 5x_1 - 2x_2$$

$$\frac{dx_2}{dt} = 4x_1 - x_2$$

6

$\frac{2}{3}$

Department of Information and Communication Engineering
Pabna University of Science and Technology
Faculty of Engineering and Technology
B.Sc. (Engineering) 1st Year 2nd Semester Examination-2016
Session: 2015-2016
Course Code: Eng-1201 Course Title: Fundamental English

NB: 1. Answer any SIX (THREE from each PART) questions.
2. Figures in the right margin indicate marks.
3. Parts of the same question should be answered together and in the same sequence.
4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 70

PART-A

Read passage carefully and answer the following questions:

As February 29, 2016 approaches, some people may notice something unusual about the date. Last year there was no February 29. In fact, there has not been a February 29 since the year 2012. Why has February 29 occurred only once in four years? To understand this confusing arrangement, it is necessary to understand the calendar that is currently used in the United States. Nearly all modern societies use some kind of calendar to decide on the date and time of everything, from religious holidays to business meetings. The kind of calendar used determines what makes up a week, a month, or a year. Some societies use lunar calendars, which are based on the rotation of the moon on the Earth, and others use solar calendar. The solar calendar used by most of the world today is known as the Gregorian calendar. Named after Pope Gregory XIII, who introduced it in 1582, the modern calendar is the end of result of hundreds of years of fine-tuning. It was developed from the Julian calendar, which was created in 46 BC by Julius Caesar. The Julian calendar was also a solar calendar, based on the time it takes for earth to travel one complete loop around the sun. In Julius Caesar's time, although astronomers believed that the sun revolved around Earth, they still managed to make fairly accurate measurements of the length of a complete cycle. A solar year, they calculated, was about 365.25 days long. Julius Caesar, deciding that it would be difficult to add ¼ of a day onto each year, ordered one extra day to be added every four years to the month of February, creating what would be called 'leap' years. This calendar was used by the western world for over a thousand years.

1. a) Answer the questions below: 4
- What is the name of the calendar currently used in the United States?
 - What best describes the reason for creating leap years?
- b) Complete the following sentences with suitable words: 4
- We use a calendar to decide....
 - Lunar calendars are based on.....
 - Julian calendar was created....
 - A solar year was....
 - Gregorian calendar is used....
- c) Make a précis of the passage above. 2
2. a) Suppose you are the manager of an embroidery department in a garments factory. Call a meeting using memo format, of your colleagues, to discuss introducing new designs in embroidery. 0
- b) Write a letter to your friend telling him about your reaction to the reckless driving that took away a beggar's life. 2
3. a) Make sentences using the following structures: 5
- I ft sub + v.b (present), Sub + will + verb word.
 - Sub + must be + adjective.
 - Would you please not + verb word.
 - Sub + let + someone + verb word.
 - Adverb (future) + Sub + will + have + participle.
 - Sub + BE (present) + verb word + simple future tense.

Department of Information and Communication Engineering

Pabna University of Science and Technology, Pabna

Faculty of Engineering and Technology

B.Sc. Engineering 1st Year 2nd Semester Examination-2016

Session: 2015-16

Course Code: ICE-1201 Course Title: Analog Electronics

- NB:**
1. Answer any **THREE** questions out of four from each PART.
 2. Figures in the right margin indicate full marks.
 3. Parts of the same question should be answered together and in the same sequence.
 4. Separate answer script must be used for answering the questions of PART-A and PART-B.

Time: 3 Hours (For Part A and Part B)

Total Marks: 70

PART-A

1. a) What do you understand by d.c and a.c load lines? How will you construct them on the output characteristics? 4
b) What is the significance of operating point? 2
c) Draw a small signal hybrid equivalent circuit of CE amplifier and derive expression for current gain, voltage gain and input impedance. $5\frac{2}{3}$
2. a) Draw the circuit of class B push-pull amplifier and explain its operation. Derive an expression for its maximum efficiency. 8
b) A class A power amplifier has a transformer as the load. If the transformer has a turn ratio of 10 and secondary load is 100Ω , find the maximum a.c. power output. Given that zero signal collector current is 100mA. $3\frac{2}{3}$
3. a) Define the terms: gain, decibel gain and bandwidth. // 3
b) With a neat circuit diagram explain the working principle of a transformer coupled transistor amplifier. $6\frac{2}{3}$
c) An 8Ω speaker is match to an amplifier so that the effective load resistance is $8k\Omega$. What should be the transformer turn ratio? 2
4. a) What do you mean by virtual feedback? 2
b) What is feedback? Derive the equation of voltage gain with and without feedback. 6
c) Explain the effect of negative feedback on stability and distortion. $3\frac{2}{3}$

PART-B

1. a) What is multivibrator? What is the difference between different types of Multivibrator? 3
b) Mention the advantages and disadvantages of Colpitt's oscillator. 3
c) Draw and explain the working principle of Hartley oscillator. 5
2. a) What are the advantages of integrated circuit over conventional circuit? What are their drawbacks? 3
b) Explain different process involved in the fabrication of monolithic integrated circuits. $5\frac{2}{3}$
c) Explain how isolation between components is obtained in an IC. 3
3. a) Define the terms i) Input bias current, ii) Input offset current and iii) Input offset voltage. 3
b) Describe the function of a OP-AMP as i) an adder and ii) a subtractor. 6
c) Calculate the output voltage of an Op-Amp summing amplifier for the following sets of voltages and resistors. Use $R_f = 1 M\Omega$, $V_1 = +1 V$, $V_2 = +2 V$, $V_3 = +3 V$, $R_1 = 500 k\Omega$, $R_2 = 1 M\Omega$, and $R_3 = 1 M\Omega$. $2\frac{2}{3}$
4. a) What is an active filter? Write advantages of its. 2
b) What do you know about order of a filter? 2
c) Explain the operation of a second order band-stop filter with circuit diagram. $\frac{4}{3}$
d) Discuss how OP-AMP can be used as a comparator. 3