MID-Term Questions

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PREMIER UNIVERSITY
CSE 2nd semester Midterm Examination- Nov'2018
Course title: Engineering Physics II, Course code: PHY 103

Time: 1 hour (Answer any one question) Marks: 20

1. (a) State and explain Biot-savart law?
(b) Find an expression of magnetic induction at a point due to a straight conductor carrying current.
(c) 15 A current passing through a straight wire of length 2m.Find the magnetic field at a perpendicular distance of 3cm from the wire.
(d) Explain magnetic field vector (B)?
(e) Calculate the magnetic field of long straight wire that has a circular loop with a radius of 0.05m.The current flowing through this closed loop is given as 2 A.

3+7+3+3+4=20

2. (a)State Gauss's law? Find an expression for a long charged cylinder from the application of Gauss's law.
(b) What is the velocity of electron that has been acceleration through a potential difference of 100 volt?
(c) Find an expression of potential for an electric dipole.
(d) The potential at points in a plane is given by:

$$V=\frac{a}{(x^2+y^2)^{1/2}}+\frac{b}{(x^2+y^2)^{1/2}}$$

Where, x and y are the rectangular coordinates of a point, a & b are constants. Find the components E_x and E_y and the electric intensity at any point.

(2+5)+3+6+4=20

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Premier University, Chittagong

Department of Computer Scienfce and Engineering
2nd Semester mid-term Examination, November 2018
Course Title: Discrete Mathematics, Course Code: CSE 103
Time-40mins; Total-20

1 a) Construct truth table for the following connectives:

(i) $(s \rightarrow (p \wedge \bar{r})) \wedge ((p -> (r \vee q)) \wedge s)$

(ii) $(p \vee (\bar{p} \wedge \overline{(q \vee r)})) -> (p \vee \overline{(r \vee q)})$

b) Prove that every formula has an equal number of right and left parentheses.

2 a) Let the universal set U={1,--------,10},A={1,4,7,10}, B={1,2,3,4,5} and C={2,4,6,8}.Use bit representations for A,B and C together with UNION, INTER, DIFF and COMP to find the bit representation for the following:

(i) $((C \cap A) - \overline{(B - A)}) \cap C'$

(ii) $(B - \bar{C}) \cup ((B - \bar{A}) \cap (C \cup B)$

(iii) $A \times B \times C$

b) Define Symmetric Difference. State and prove De-Morgan's Laws.

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Electronics I Mid-Term Exam

Course Code: EEE 211 (C)

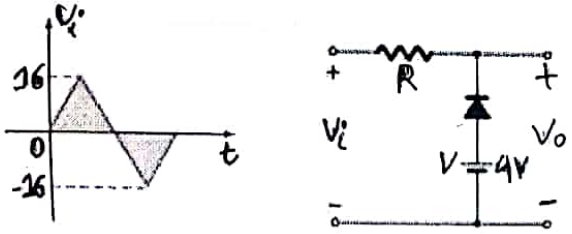
Time: 1hour **Marks: 20**

1.a)Illustrate energy diagrams for three types of materials – Insulator, Conductor and Semi-Conductor. 3

b)Describe briefly how depletion region is formed in pn junction. 3.5

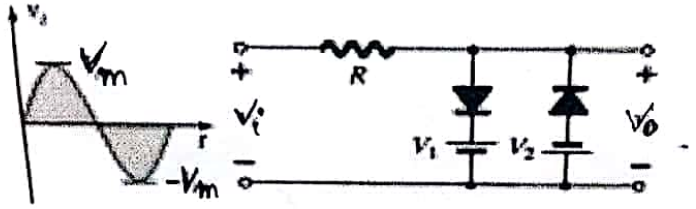
2. Determine vo for the networks

i)



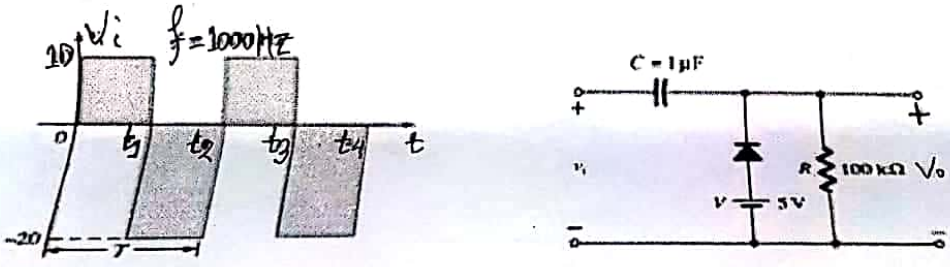
2.5

ii)



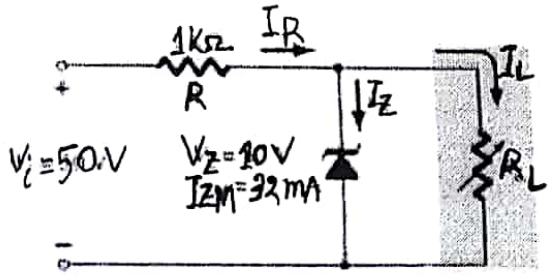
3.5

iii)



3.5

3. For the network determine the range of RL and IL that will result in VRL being maintained at 10 V.



Determine the maximum wattage rating of the diode. 4

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Premier University
Department of CSE
Mid Term Exam (Sec C), November 2018
Course Title: Structured Programming **Course Code: CSE 111**

Time: 1 hour **Total Marks: 20**

1. Write down the four main library functions to process string in C. **02**

2. What is the basic difference between i++ and ++i? If **i=10**, evaluate the value of **x** and **y**. **02**

```
x = 100 + i++;
y = 100 + ++i;
```

3. What is a ***function***? What are the elements of ***User-defined*** function? Give an example of a C program containing a user-defined function and mention all the elements of that user-defined function. **04**

4. Write a C program to print the numbers, between 1 and 500, which are divisible by 3 but not divisible by 4. **03**

5. Differentiate between ***break*** and ***continue*** statement. Write the outputs of the following C programs. **05**

a)
```
#include<stdio.h>
int main(){
int i;
for(i=0;i<6;i++){
 if(i>3||i<2){
 printf("yes yes yes\n");
}
else {
 printf("no no no\n");
    }
    return 0;  }
```

b)
```
#include<stdio.h>
#include<string.h>
main(){
char str[]="C PROGRAMMING";
int i,j;
for(i=0;i<strlen(str);i++) {
    for(j=0 ; j<i+1 ; j++)
{
     printf("%c",str[j]);
}
      printf("\n");
} }
```

6. Write a C program to generate the following output. **Hints:** use nested loops and write the program for **n** lines. **04**

```
1
4 4
9 9 9
16 16 16 16
```

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Premier University, Chittagong

Department of Computer Science and Engineering

2nd Semester mid-term Examination, November 20

Course Title: Discrete Mathematics;Course Code: CSE 1

Time: 30 mins, Full Marks: 20

[N.B. - (Answer all questions;]

1 a) Construct truth table for the following connectives:

(i) If P= $(s \rightarrow (p \wedge \bar{r})) \wedge ((p \rightarrow (r \vee q)) \wedge \bar{s})$ and $Q = p \vee t$

Then show that $P \equiv Q$

2 a) Let A= $\{n : n \in N and n = 3k + 2 for some k \in N\}$;

$B = \{n : n \in N and n = 5k - 1 for some k \in N such that k \geq 5\}$ and

$C = \{m \in N : m = 6k - 4 and k \in N and k \geq 1\}$

Prove that (a) $C \subset A$

(b)A $\neq B$

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CT Questions

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Electronics I Class Test

Course Code: EEE 211 (C)

Time: 25minutes **Marks: 10**

1. Draw the input and output characteristic curve for common emitter configuration. 3
2. Prove that, $\beta = \frac{\alpha}{1-\alpha}$ 3
3. A transistor is connected in common emitter (CE) configuration in which collector supply is 8V and the voltage drop across resistance R_c connected in the collector circuit is 0.5V. The value of R_c = 800 Ω. If $\alpha = 0.96$, determine : 4
   (i) collector-emitter voltage
   (ii) base current

$V_{EE} = IR_E$

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Course Title: Structured Programming
Course Code: CSE 111 Class Test: 01
Total Marks: 20 Time: 40 mins

1. What is the basic difference between counter controlled loop and sentinel controlled loop?

2. Write the output of the following C program.

```
#include<stdio.h>
int main() {
   int num=23456;
   float value=678.12345;
   printf("%4d\n",num);
   printf("%8d\n",num);
   printf("%-8d\n",num);
   printf("%4.2f\n",value);
   printf("%8.3f\n",value);
   printf("%-8.2f\n",value); }
```

3. What will be the output of the following C program?

```
#include<stdio.h>
int main() {
    int i=10,j=5;
    float x=3.5,y=2.5;
    char ch1='c',ch2='d';
    float result1= i/(i-j) - (x>y) + (ch1+ch2);
    int result2= (i<i)&& (j>i) || (x<y) && (ch2>ch1);
    printf("%.2f\n",result1);
    printf("%d\n",result2); }
```

4. a) What will be the output of the following C program?

```
#include<stdio.h>
int main()
{
  int i,j;
  for(i=1;i<=5;i++) {
  if(i%2==1)
    printf("yes yes yes\n");
  else
    printf("no no no\n");
  } }
```

b) Write the output of the following C program.

```
#include<stdio.h>
int main() {
   int i,j;
   for(i=1;i<=5;i++) {
      if(i%2==1) {
         continue;
      }
      for(j=1;j<=i;j++)
      {
        if(j==3)
          break;
        printf("%d ",i*j);
      }
      printf("\n");
   }
}
```

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Premier University

Marks-10 CSE, CT-1 Time-30 min

1(a) What do you mean by Electric flux? Explain. -2

(b) State Gauss Law? What is Gaussian surface? -

(c) Two particles with equal charge magnitudes 3.0 x 10-7 C but opposite signs are held 20 cm apart. What are the magnitude and direction of the Electric Field **E** at the point midway between the charges?

(d) What is Electric potential? How it is related to electric field **E**

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CT -2

DCSE, Engineering physics II

1.(a) Show that the difference between two consecutive Bright fringe and dark fringe $\beta = \lambda D/d$. 6

(b)In Young's double slit experience the separation of the slits is 1.9 mm and the fringe spacing is 0.31mm at a distance of 1 meter from the slits. Calculate the wavelength of light. 4

2.(a) Give analytical treatment of interference. 6

(b)In Young's double slit experience the separation of the slits is 1.9 mm and the fringe spacing is 0.31mm at a distance of 1 meter from the slits. Calculate the wavelength of light. 4

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Electronics I Class Test

Course Code: EEE 211 (C)

Time: 25minutes

1. Define i)Differential Mode and ii) Common mode operation of Op-Amp.
2. Show that, gain equation of a non-inverting amplifier is $A_{cl} = 1 + \frac{R_f}{R_i}$
3. Draw circuits of i)Summing Amplifier ii)Integrator

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