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**Question 1**

(a) Convert the 345 decimal number to

1. (i) Binary
2. Remainder
3. 2 | 345 1
4. 2 | 172 0
5. 2 | 86 0
6. 2 | 43 1
7. 2 | 21 1
8. 2 | 10 0
9. 2 | 5 1
10. 2 | 2 0

1

Ans: 0000 0001 0101 1001

1. (ii) Octal
2. Remainder
3. 8 | 345 1
4. 8 | 43 3

5

Ans: 531

(iii) Hexadecimal

Remainder

1. 16 | 345 9
2. 16 | 21 5

1

Ans: 0×159

(b) Calculate the following

1. (i) 4568 + 7468

1 1

4 5 6 68 + 68 = 14(1,2,3,4,5,6,7,10,11,12,13,14)

+ 7 4 6 58 + 48 + 18 = 12(1,2,3,4,5,6,7,10,11,12,13,14)

---------------- 78 + 48 + 18 = 14(1,2,3,4,5,6,7,10,11,12,13,14)

1 4 2 4

Ans:1424

1. (ii) 10112 \* 1012
2. 10112 \* 1012 = 110111

1 0 1 1

x 1 0 1

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1 0 1 1

0 0 0 0

1 0 1 1

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1. 1 0 1 1 1
2. Ans: 0011 0111(8Bits)
3. 0000 0000 0011 0111(16Bits)
4. (iii) F6B16 + BCE16

1 1

F 6 B16

+B C E16

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1 B 3 9

B+E=11+14=25

25-16=9 Therefore 25 is 0x19

1+6+C=1+6+12=19

19-16=3 Therefore 19 is 0x13

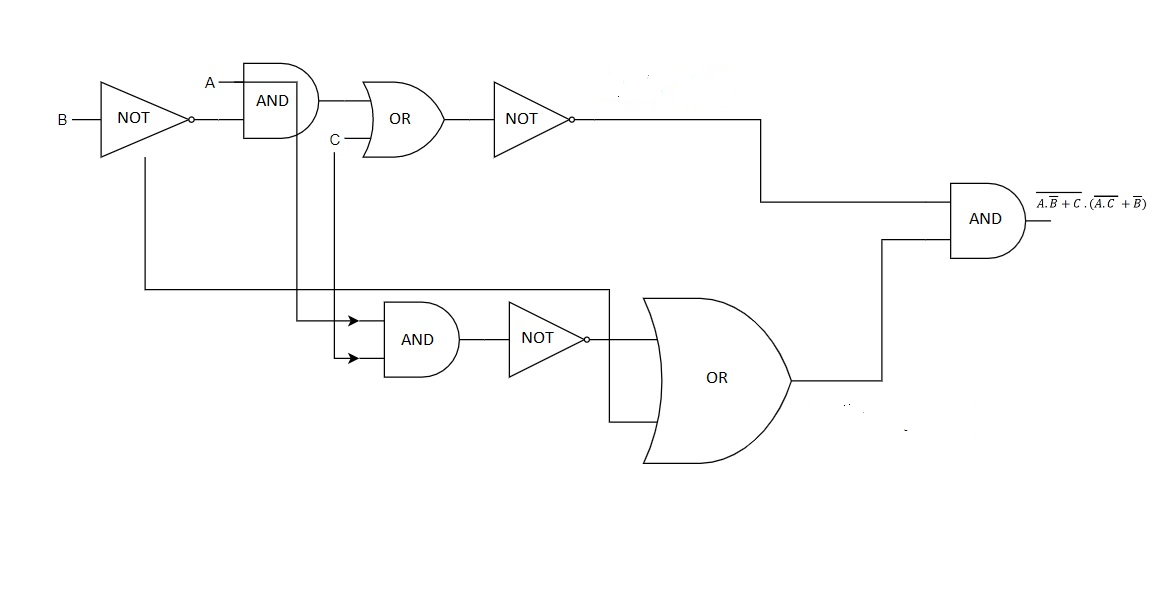
1+F+B=1+15+11=27

27-16=11 Therefore 27 is 0x11

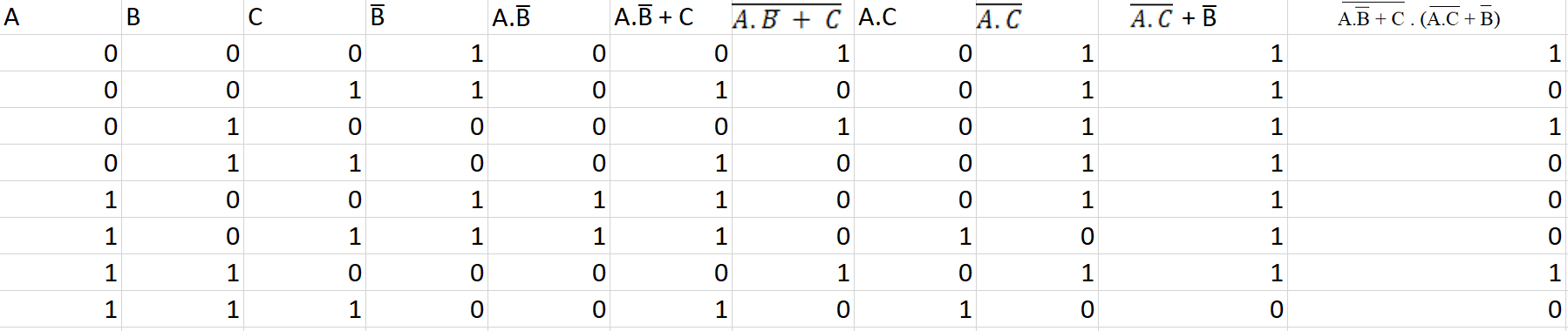
Ans:1B39

**Q2**

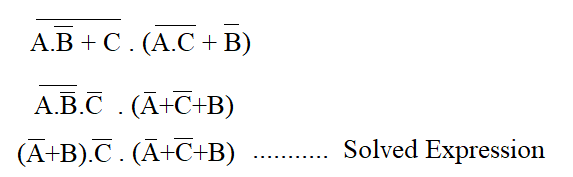
**i)**

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**ii)**

****

**iii)**

****

Question 3

(a)

frequency = [440.0 493.9 523.2 587.3 659.3 698.5 784.0];

wavelength = [0.7800 0.6949 0.6559 0.5843 0.5206 0.4914 0.4378 ]

reciprocal = []

for i=1:length(wavelength)

reciprocal =[reciprocal,1/wavelength(i)]

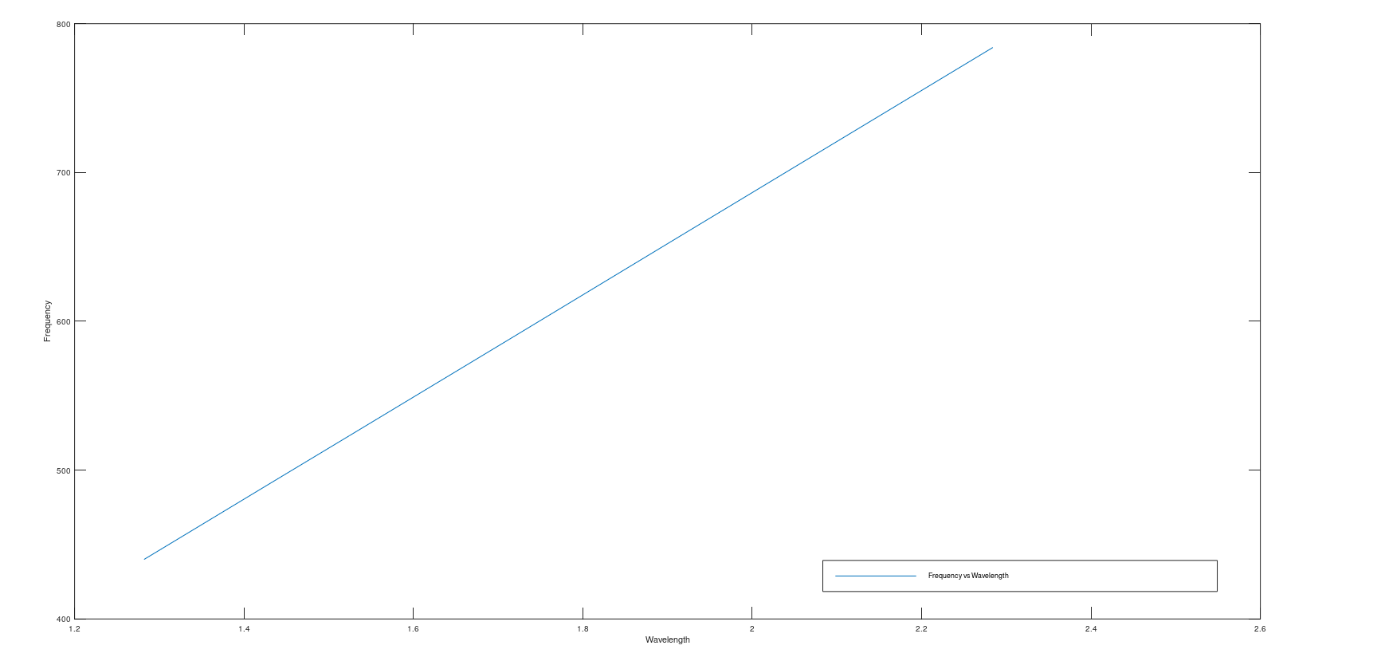
end

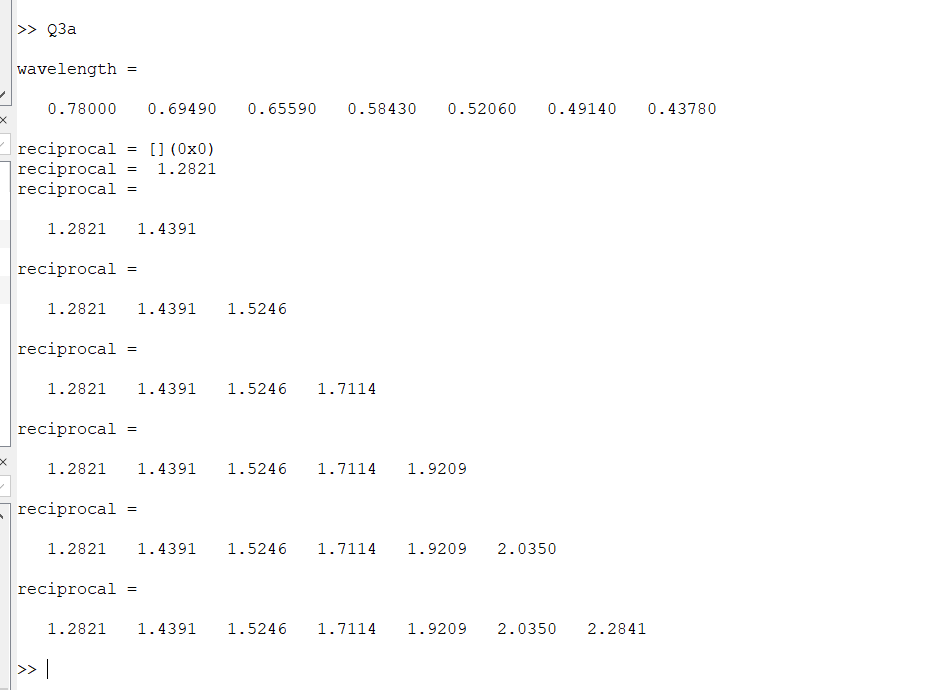
plot(reciprocal,frequency);

xlabel('Wavelength')

ylabel('Frequency')

legend({'Frequency vs Wavelength'},'Location','southeast')





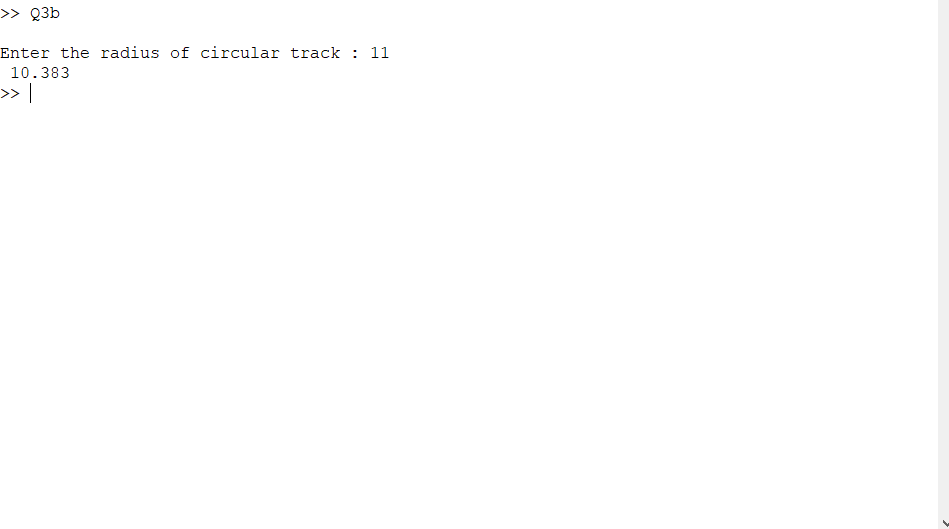
(b)

radius=input('Enter the radius of circular track : ');

gravity=9.8;

minimum\_speed= sqrt(gravity\*radius);

disp(minimum\_speed);



Q4(a)

choice = input('Select Your choice (DR or RD) : ','s');

while choice != 'RD' && choice!='DR'

disp('You Have Entered Wrong Keyword');

choice = input('Select Your choice (DR or RD) : ','s') ;

end

if choice == 'DR'

angle\_in\_degree = input('Please input Angle in degrees : ');

while isempty(angle\_in\_degree)

angle\_in\_degree = input('Please input Angle in degrees : ');

end

angle\_in\_radian = angle\_in\_degree\*pi/180;

disp('The Angle in radian is : ');

disp(angle\_in\_radian);

end

if choice == 'RD'

angle\_in\_radian = input('Please input Angle in radian : ');

while isempty(angle\_in\_radian)

angle\_in\_radian = input('Please input Angle in radian : ');

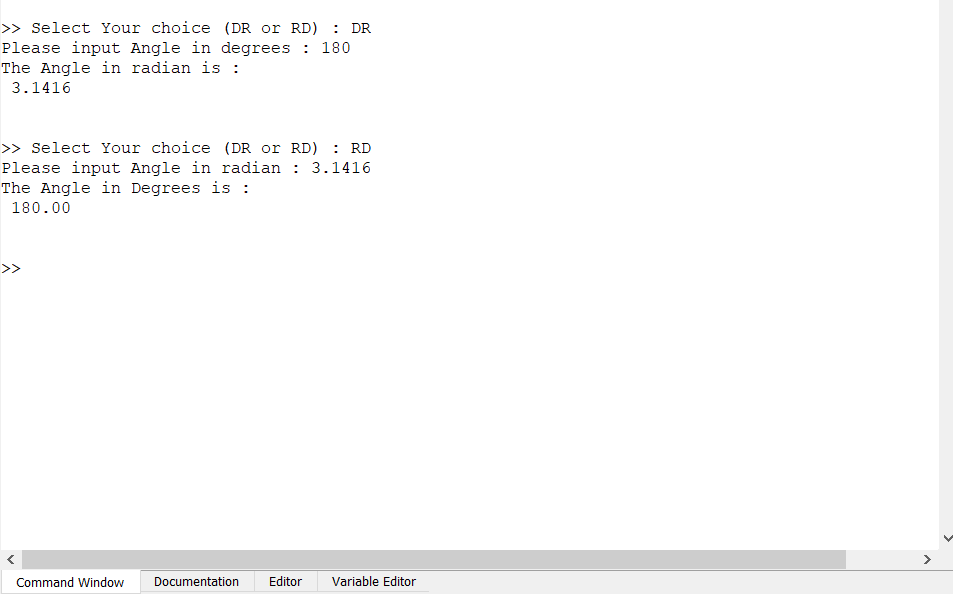
end

angle\_in\_degree = angle\_in\_radian\*180/pi;

disp('The Angle in Degrees is : ');

disp(angle\_in\_degree);

end



Q5(a)

question = 'Enter the value of N : ';

value\_of\_n = input(question);

summation = 0;

for i=1:value\_of\_n

ans1= 1/i;

ans2=(i+2)\*(i+3)

ans3= 1/ans2;

summation += ans1+ans3;

end

disp('')

disp(summation);



B)

A = B = C = D =

i) AB X =

ii) CD X =

iii) 4(C+D) 4 X ( + ) =

iv) 5C-3D 5 X - 3 X =

v) 2A+DA 2 X + X =

Q6

true\_condition = true

while true\_condition == true

entered\_name = input('Enter name : ','s');

entered\_address = input('Enter Address : ','s');

entered\_amount = input('Enter amount of purchase:')

type\_of\_purchase = input('Enter Type of Purchase (Laptop(L) or Desktop(D) ) :' ,'s')

if type\_of\_purchase =='L' || type\_of\_purchase == 'l'

if entered\_amount<=250

discount\_given = 0;

end

if entered\_amount>250 && entered\_amount<=570

discount\_given = 0.05\*entered\_amount;

end

if entered\_amount >570 && entered\_amount <=1000

discount\_given = 0.075\*entered\_amount;

end

if entered\_amount >1000

discount\_given = 0.1\*entered\_amount;

end

net\_amount = entered\_amount - discount\_given;

fprintf('\nName : %s',entered\_name);

fprintf('\nAddress : %s',entered\_address);

fprintf('\nNet Amount : %f',net\_amount);

elseif type\_of\_purchase == 'D' || type\_of\_purchase == 'd'

if entered\_amount<=250

discount\_given = (0.05\*entered\_amount);

end

if entered\_amount>250 && entered\_amount<=570

discount\_given = 0.075\*entered\_amount;

end

if entered\_amount >570 && entered\_amount <=1000

discount\_given = 0.1\*entered\_amount;

end

if entered\_amount >1000

discount\_given = 0.15\*entered\_amount;

end

net\_amount = entered\_amount - discount\_given;

fprintf('\nName : %s',entered\_name);

fprintf('\nAddress : %s',entered\_address);

fprintf('\nNet Amount :%f ',net\_amount);

else

disp('Invalid type of purchase')

end

fprintf('\n')

choice = input('Do you wish to continue Purchase?','s');

if choice == 'Y' || choice == 'y'

true\_condition = true;

else

true\_condition = false;

fprintf('\n')

disp('You have exit purchase screen, Goodbye.')

end

end

