1. Solve the following

a. Study and enlist the basic functions used for graphics in C / C++ / Python language.

Give an example for each of them

b. Draw a co-ordinate axis at the center of the screen.

Solution :-

a. Basic functions used for graphics

/* graphics program to draw a line */

Declaration:- **void line(int x1, int y1, int x2, int y2);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   line(100,100,200, 200);
   getch();
   closegraph();
}
```

/* graphics program to draw a circle */

Declaration:- **void circle(int x, int y, int radius);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   circle(100,100,50);
   getch();
   closegraph();
}
```

/* graphics program to draw a rectangle */

Declaration:- **void rectangle(int left, int top, int right, int bottom);**

```
#include<graphics.h>
#include<conio.h>
```

```
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   rectangle(100,100,200,200);
   getch();
   closegraph();
}
```

/* graphics program to draw a ellipse */

Declaration:- **void ellipse(int x, int y, int stangle, int endangle, int xradius, int yradius);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   ellipse(100,100,0,360,50,50);
   getch();
   closegraph();
```

```
}
```

/* graphics program to draw arc */

Declaration:- **void arc(int x, int y, int stangle, int endangle, int radius);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   arc(100,100,0,135,50);
   getch();
   closegraph();
}
```

/* graphics program to draw bar */

Declaration:- **void bar(int left, int top, int right, int bottom);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   bar(100,100,200,200);
   getch();
   closegraph();
}
```

/* graphics program to draw bar3d function */

Declaration:- **void bar3d(int left, int top, int right, int bottom, int depth, int topflag);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
```

```
    int gd = DETECT, gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");
    bar3d(100,100,200,200,20,1);
    getch();
    closegraph();
}
```

/* graphics program to draw polygons */

Declaration:- **void drawpoly(int num, int *polypoints);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
    int gd = DETECT, gm, points[] =
{320,150,420,300,250,300,320,150};
    initgraph(&gd, &gm, "C:\\TC\\BGI");
    drawpoly(4,points);
    getch();
    closegraph();
```

```
}
```

/* graphics program to draw and fill polygons */

Declaration:- **void fillpoly(int num, int *polypoints);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm, points[] =
{320,150,420,300,250,300,320,150};
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   fillpoly(4,points);
   getch();
   closegraph();
}
```

/* graphics program to fill enclosed area */

Declaration:- **void floodfill(int x, int y, int border);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   setcolor(RED);
   circle(100,10,50);
    floodfill(100,100,RED);
    getch();
    closegraph();
}
```

/* graphics program to fill ellipse */

Declaration:- **void fillellipse(int x, int y, int xradius, int yradius);**

```
#include<graphics.h>
```

```
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
    fillellipse(100,100,50,25);
    getch();
    closegraph();
}
```

/* graphics program to display text at current position*/

Declaration:- **void outtext(char *string);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   outtext(“To display text at particular position on the screen”);
    getch();
```

```
    closegraph();
}
```

/* graphics program to plot a pixel at location (x,y) of specified color */

Declaration:- **void putpixel(int x, int y , int color);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   putpixel(25,25,RED);
    getch();
    closegraph();
}
```

/* graphics program to change the current drawing color */

Declaration:- **void setcolor(int color);**

```
#include<graphics.h>
#include<conio.h>
void main()
{
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   circle(100,100,50);
   setcolor(RED);
   circle(200,200,50);
    getch();
    closegraph();
}
```

b. Draw a co-ordinate axis at the center of the screen.

Solution:-

```
#include<graphics.h>
```

```
#include<conio.h>
void main()
{
   int gd=DETECT,gm,midx,midy;
       initgraph(&gd,&gm,"C:\\TC\\BGI");
       cleardevice();
       midx =  getmaxx()/2;
       midy = getmaxy()/2;
       line(1,midy,640,midy);
       line(midx,1,midx,480);
       getch();
       closegraph();
}
```