Faculty of Engineering (Shoubra)
Engineering Mathematics and Physics Department

Benha University
Mechanical Department
2st year Production
Time allowed:30 Minutes

3rd Quiz

Student Name in Arabic: **Section:** **B.N. :**

1) Find F(s) of the following functions:

a) f(t) = sint , t > 2 , b) $\frac{e^{2t}-e^{-3t}}{t^2}$, c) f(t) = t+4, f(t+2) = f(t)

2) Solve the differential equation

$$y'' - 3y' + 2y = 20\,e^{5t}, \quad y(0) = 7, \; y'(0) = 2$$

3) Verify

a) $\int_0^{\infty} \frac{t^{ac-1}}{(1+t^c)^{a+b}}dt = \frac{1}{c}\beta(a,b)$, b) $\int_0^{1} \frac{t^{aq-1}}{\sqrt[q]{(1-t^q)}}dt = \frac{1}{q}\beta(a,1-1/q)$