الدور الأول

University of Technology
Department of Applied Sciences
Final Examination
2014 -2015

Subject : Mathematic | *Class : 2nd year*
Branch : Materials science | *Time : 3 hours*
Examiner :Saba Sattar | *Date : 1/6/2015*

Answer seven Questions

Note: every question 10 marks

Q1\Solve $\ddot{y} + y = \sec x$

Q2\ Find the Laplace Transform $\mathcal{L}\left\{\frac{e^t \int_0^u sin2t\, dt}{t}\right\}$

Q3\ Solve $x\frac{dy}{dx} = 2xe^x - y + 6x^2$ (in two ways).

Q4\ Solve

$$y^{(5)} + 5y^{(4)} - 2y^{(3)} - 10\ddot{y} + \dot{y} + 5y = 6x^2 + 2 - 12e^{3x}$$

Q5\ Find the Invers Laplace Transform $\mathcal{L}^{-1}\left\{\frac{s}{s^2-2s+4}\right\}$

Q6\ Solve $(x^2 + y^2)dx + 2xydy = 0.$

Q7\ Find the Invers Laplace Transform $\mathcal{L}^{-1}\left\{\frac{1}{(s^2+1)^2}\right\}.$

Q8\ Find the Laplace Transform $\mathcal{L}\{sinht\, cost\}$

الدور:- الأول

University of Technology
Department of Applied Sciences
Branch of Material Science
Final Examination
2014 -2015

Branch: Material Science
Subject: Construction Material
Examiner: Assist.Lect. Rami Joseph

Class : 2nd year
Time : 3 hours
Date : 2015/6/17

Note: (Choose only five questions).

Q1/ A/ Define the flowing terms: (Choose 5) — 10 Marks

1. Concrete.
2. Construction materials.
3. Coefficient of liner expansion.
4. Curing.
5. Rod **A** (Vicat Needle).
6. Alloy.

B/ Mention advantages and Disadvantages of concrete. — 10 Marks

Q2/ Answer the following (choose two) — 20 Marks

1. Define admixtures, what are the advantages of admixtures.
2. What are the advantages of low (water/cement) ratio?
3. What are the classifications of aggregates?

Q3/ Define Shotcrete, what are the types of mixing, explain all types? and draw all types. — 20 Marks

Q4/ What are the kinds of steel, explain briefly all kinds, put in table the percentage of carbon for each kind. — 20 Marks

20 Marks

Q5/ Answer the following (choose two)

1. Comparison between Alite and Bilte.
2. What are the types of fibers? Explain F.G.
3. What are the types of concrete, Explain one of them.

20 Marks

Q6/ Answer the following (choose two)

1. What is the relation between W/C and compressive strength according to Abrams?
2. Draw the development of strength of pure compounds of cement.
3. What are the types of cement?

GOOD LUCK