Department of Botany&Microbiology ,
Faculty of Science, May, 2020
Damietta University. Time : 2 hours
Practical degree Exam.(Botany/Chem)
In Physiology of microorganisms

Q1 -While studying the effect of different nitrogen sources on the growth of *Aspergillus niger*. The data obtained in the following table

Nitrogen source	NaNO3	Asparagine	Amm.nitrate	Ammonium chloride
Dry weight (mg) Sugar consumed (g)	2450 25	3520 35	4550 30	1050 15

1- Write the procedure of the experiment
2-Draw a histogram correlating the relations between mycelial dry weight, economic coefficient at various nitrogen sources.
3- Comment on all of these results.

Q2- The survival and growth of microorganisms strongly depends on temperature. Each organism has its own temperature range. Cultures of E. coli were incubated at 24 ºC, 37ºC and 42ºC. Growth of the bacteria was monitored for the next 10 hrs by taking time points approximately every 1.5 hrs using optical density measurements to monitor culture growth. The following results are obtained

Absorbance measurements for E.coli growth at temperatures of 24,37 and 42 ºC

Time (hours)	**24 ºC**	**37ºC**	**42ºC**
0	0.0137	0.045	0.047
1	0.041	0.055	0.081
2.58	0.177	0.251	0.236
4	0.492	0.658	0.585
5.5	1.17	1.212	1.143
7	1.46	1.333	1.186
8.5	1.59	1.403	1.241
10	1.68	1.466	1.293

1- Draw growth curves at the three different temperatures
2- Comment

Q3 Answer the following question

a-Discuss the effect of light and heavy metals on fungal growth?
b- Mention the economic uses of the ligninolytic enzymes, give examples of producing fungal species?
c- Discuss the microbial tropic response to oxygen?
d- How can you detect the contamination of water sample with bacteria

Best wishes from Prof. Amira El-Fallal