



تعليمات

على الطالب مراعاة الآتى:


- 1- الامتحان يتكون من 9 صفحات تشتمل على:
 - عدد 8 صفحات أسئلة مرقمة من 1 الى 8.
 - صفحة واحدة مسودة رقم 9.
- 2- يجب التأكد من عدد الصفحات قبل البدء فى الإجابة.
- 3- يجب الإجابة على كل سؤال فى الجزء المخصص له ولن يلتفت الى أى إجابات فى صفحة المسودة أو الأجزاء غير المخصصة له.
- 4- يجب الكتابة باللون الأزرق فقط وعدم استعمال أى أقلام ملونة أو كوركتور.

خالص الأمنيات بالتوفيق

د. محمد أسعد الموافى



ماریتھو ذبح! لایقہ! ماریتھو ذبح!
MARKS)



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- Ensure that tubes are balanced (Position and Volume), otherwise the axe will be broken.
- Periodic oiling of the rotor axes.
- Cleanliness
- log book for centrifuge

- 1) Vertical or a horizontal cylinder
- 2) Lid
- 3) Pressure gauge
- 4) Discharge valve
- 5) Safety valve
- 6) Heating coil
- 7) Water discharge tap

Red color: No additive
Light blue: Contains citrate anticoagulant
Green: Contains Heparin anticoagulant
Violet: Contains EDTA anticoagulant
Orange: Contains coagulant

d) What are the precautions of using hot air oven? (4 Marks)

e) Answer the following questions regarding the following figure: (5 Marks)

1) The name of this device is

.....

(1 Mark)

2) The name of part D isand its color should be (0.5 Mark each)

3) To take a solution into part D, you should press (تضغط) : (1 Mark)

a) Part A

b) Part B

c) Part C

d) Both A and B at the same time (فى نفس الوقت).

e) No answer is correct.

4) To transfer (تنقل) solution from part D, you should press (تضغط) : (1 Mark)

a) Part A

b) Part B

c) Part C

d) Both A and B at the same time (فى نفس الوقت).

e) No answer is correct.

5) To remove part D, you should press (تضغط): (1 Mark)

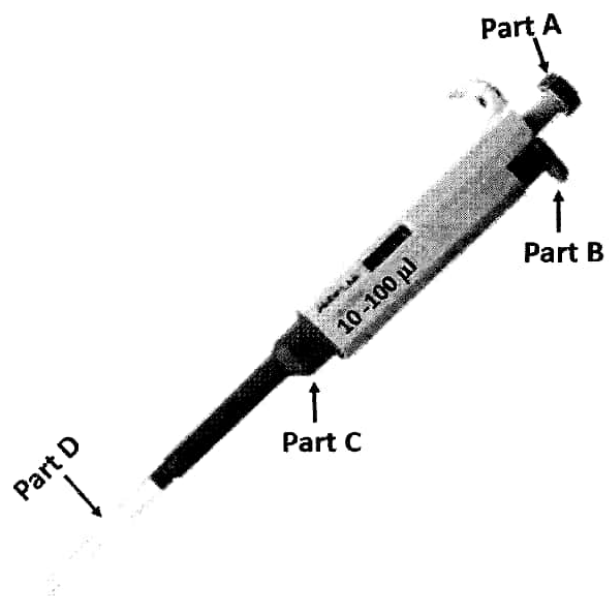
a) Part A




b) Part B

c) Part C

d) Both A and B at the same time (فى نفس الوقت).

e) No answer is correct.



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d) What are the precautions of using hot air oven? (4 Marks)


- Glassware should be dry.
- After sterilization, the oven must be allowed to cool gradually for about 2 hrs before the door is opened.
- If the door is opened before time, heat escapes and the process becomes incomplete. Thus the cycle must be properly repeated all over.
- Not suitable for plastic and rubber materials.

e) Answer the following questions regarding the following figure: (5 Marks)


1) The name of this device isVariable automatic pipette (10-100 ul).....
(1 Mark)

2) The name of part D is ...tip.....and its color should be ...blue..... (0.5 Mark each)

3) To take a solution into part D, you should press (تضغط) : (1 Mark)

- a)  b) Part B
- c) Part C d) Both A and B at the same time (فى نفس الوقت).
- e) No answer is correct.

4) To transfer (تنقل) solution from part D, you should press (تضغط) : (1 Mark)

- a)  b) Part B
- c) Part C d) Both A and B at the same time (فى نفس الوقت).
- e) No answer is correct.

5) To remove part D, you should press (تضغط): (1 Mark)





- a) Part A b)  d) Both A and B at the same time (فى نفس الوقت).
- c) Part C
- e) No answer is correct.

Table for answers of Question II and III.

Answers of Question II (Only write the <u>letter</u> !!)				Mark:
Question	Answer	Question	Answer	
1	a	6	d	
2	d	7	d	
3	d	8	d	
4	c	9	c	
5	b	10	e	
Answers of Question III				Mark:
Question	Answer	Question	Answer	
1	Centrifuge	11	P	
2	Shaker incubator	12	Cultivation of cell lines (Cell culture technique)	
3	HEPA filter	13	Ethylene oxide	
4	Laminar flow hood	14	Petri dish	
5	Autoclave	15	1.5 ml eppendorff tube	
6	1.5 ml Eppendorf tube rotor	16	Preparation of solid medium for bacteria cultivation	
7	Unbalanced rotor	17	15 ml Falcon tube	
8	-196 to -210° C (-346° F to -320 ° F)	18	96-well (microtiter) plate	
9	Co2 incubator	19	Cultivation of cell lines (Cell culture technique)	
10	Cultivation of anerobic bacteria and cell culture	20	Self standing 50 ml Falcon tube	




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❖ Question II: (10 Marks)

Choose the correct answer for the following statements and transfer only its letter to the table in page number 3: (10 Marks/1 Mark each)

ولن يلتفت الى اى اجابات خاصة بهذا السؤال الا فقط الموجودة فى المكان المخصص لها بالجدول فى
صفحة رقم 3 :

1- The unit of shaking is:	
a) rpm	b) x g
c) rcf	d) All the above.
2- The following unit of centrifugation is more accurate (أكثر دقة):	
a) rpm	b) x g
c) rcf	d) Both b and c.
3- The following classes of chemicals are used to control microbial growth:	
a) Salts	b) Aldehydes
c) Heavy metals	d) All the above
4- The following is true regarding centrifugation:	
a) The more the time of centrifugation the smaller the pellet.	
b) The higher the speed of centrifugation the smaller the pellet.	
c) Swing bucket rotor is more common (أكثر شيوعا) to be used in cell culture technique.	
d) Centrifugation is used for sedimentation of bacterial cells, blood cells, and soluble (ذائبة) proteins.	
e) No answer is correct.	
5- A closed cartoon (كارتونة مغلقة) containing glass ware (ادوات زجاجية) can be sterilized by:	
a) U.V. radiation	b) Gama radiation
c) Both A & B.	d) No answer is correct

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6- The methods of dry heat sterilization include:			
a) Hot air oven	b) Incineration		
c) Flaming	d) All the above		
7- The methods of moist heat sterilization include:			
a) Tyndallization	b) Pasteurization		
c) Autoclave	d) All the above		
8- The following is true regarding this consumable “			”:
a) It is called Syringe filter	b) It is called vaccum filter		
c) It is used for sterilization of liquids but not powder	d) Both A & C		
9- The time of sterilization of autoclave at 121 °C is:			
a) 12 min	b) 18 min		
c) 15 min	d) 20 min		
10- The following is true regarding cultivation of cell lines in cell culture technique:			
a) Medium containing agar is used for preparation of solid medium.	b) A glass flask with cotton closure is used for cultivation of cell lines.		
c) Antibiotics are added to the medium to enhance (لتحسين) the growth of cell lines.	d) All the above.		
e) No answer is correct.			




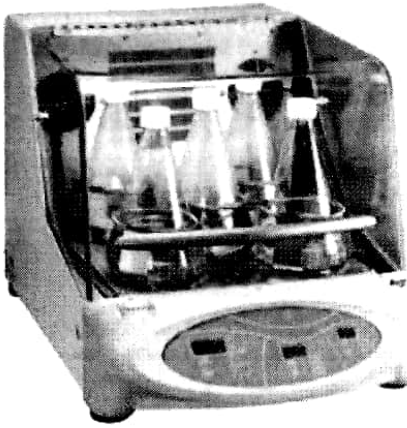
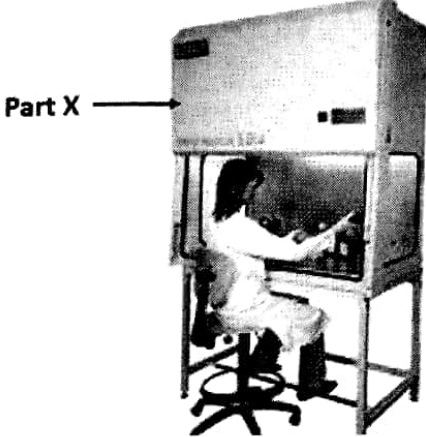
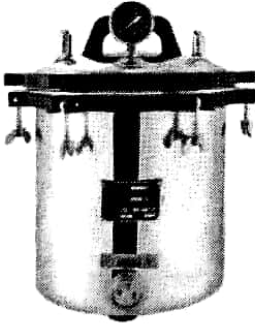
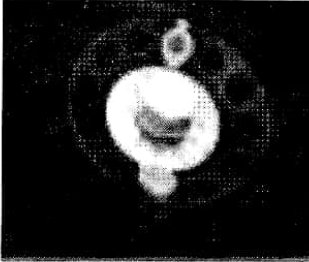
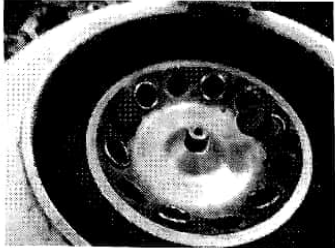
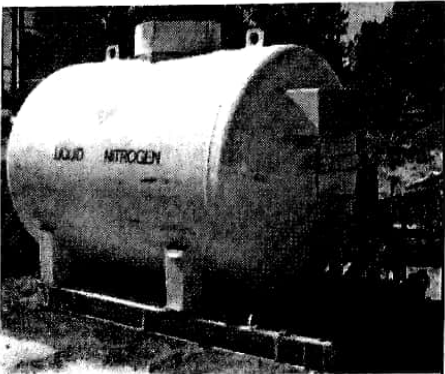
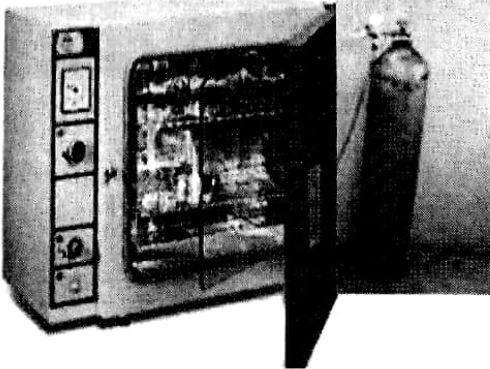
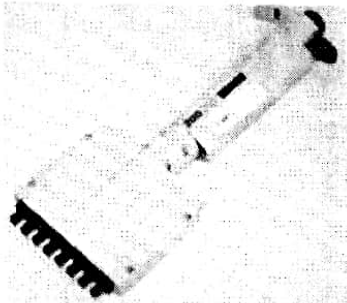
❖ Question III: (20 Marks)

Being a biomedical Engineer, then you should be aware of the following figures (A-R) for devices, part of devices or consumables.

Please only answer the following questions in the table in Page 3.

ولن يلتفت الى اى اجابات خاصة بهذا السؤال الا فقط الموجودة فى المكان المخصص لها بالجدول فى صفحة رقم 3:

- 1- What is the name of the device in figure A?
- 2- What is the name of the device in figure B?
- 3- What is the name of part X of the device in figure C?
- 4- What is the name of the device in figure C?
- 5- What is the name of device in figure D?
- 6- What is the name of part of device in figure E?
- 7- What is the problem in the part of device in figure F?
- 8- What is the temperature of the liquid Nitrogen tank in figure G?
- 9- What is the name of the device in figure H?
- 10- What is the use of the device in figure H?
- 11- The device in figure I is used for which of the consumables in the following figures:
(J , L , M , O , P , Q , R or none of them) ?
- 12- What is use of the consumable in figure J?
- 13- What does EO in figure K refers (ترمز الى) to ?
- 14- What is the name of the consumable in figure L?
- 15- What is the name of the consumable in figure M?
- 16- What is the use of the consumable in figure N?
- 17- What is the name of the consumable in figure O?
- 18- What is the name of the consumable in figure P?
- 19- What is the use of the consumable in figure Q?
- 20- What is the name of the consumable in figure R?

Devices or part of devices:		
A) 	B) 	C) 
D) 	E) 	F) 
G) 	H) 	I) 



Consumables:

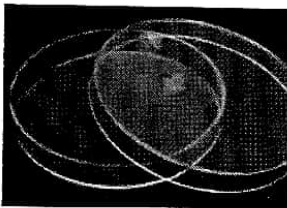
J)



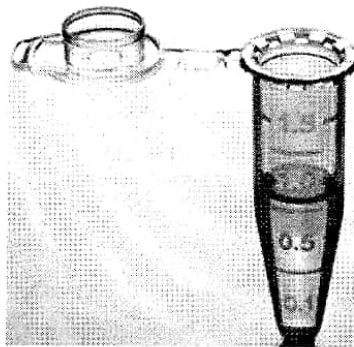
K)



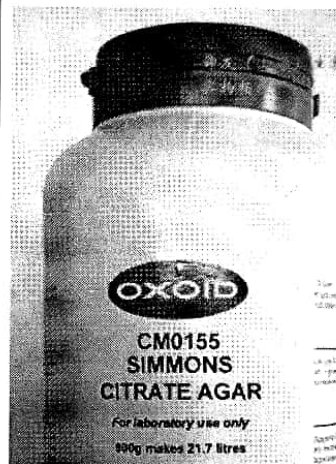
L)



M)



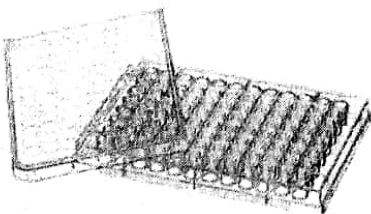
N)



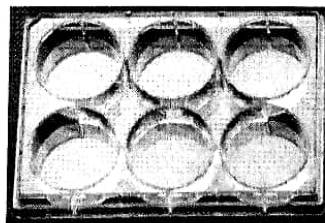
O)



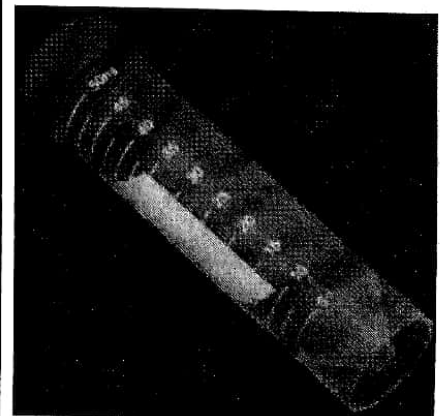
P)



Q)



R)



Good Luck
Dr. Mohammed Asaad Elmowafy