المستوى: الأول المقرر : رياضيات أساسية (2) كود المادة : تفاضل وتكامل(ر112)	كلية العلوم – قسم الرياضيات	دور مايو 2014 الزمن: ساعتان التاريخ : 17 /2014/5

برامج : كيمياء – كيمياء حيوية- كيمياء حيوان --كيمياء نبات- علوم بيئة- ميكرو بيولوجي --جيولوجيا - جيوفيزيقا

الدرجة الكلية : 80 درجة

أجب عن الأسئلة الآتية:

[1]- أ) اوجد مجال تعريف كل من الدوال الآتية : $f(x)=\sqrt{x^2+1}$, $g=\sqrt{x+2}$ وحدد ما اذا كانت زوجية ام فردية ثم اوجد $f\circ g$ (8 درجات)

ب) أوجد النهايات الآتية : (12 درجات)

$$i)\ \lim_{x\to 0}\frac{x^2}{1-\cos 2x} \qquad ii)\ \lim_{x\to 0}\frac{e^x-e^{-x}}{2x} \qquad iii)\ \lim_{x\to 2}\frac{x^3-8}{\sqrt[3]{x}-2}$$

---

[2]- أ) اوجد مجال تعريف الدالة $f(x)=\frac{3x+2}{2x-5}$ وبين أن هذه الدالة لها معكوس وأوجده. (10درجات)

ب) أوجد ميل المماس للمنحنى $y=x^3-6x+1$ ثم اوجد النقاط التى يكون عندها المماس موازيا للمستقيم $3x+y=5$ (10 درجات)

---

[3]-أ) اذا كانت : $f(x)=\frac{x^2}{(x+1)}$ اوجد $f'''(x)$ عند x=1 (8 درجات)

ب) احسب التكاملات الآتية: (12درجة)

$$i)\ \int\frac{\cos\sqrt{x}}{\sqrt{x}}\,dx \qquad ii)\ \int_0^3\frac{(x+1)(x+3)}{x}\,dx \qquad iii)\ \int(1+\tan x)^3\sec^2 x\,dx$$

---

[4]-أ) اوجد $y'=\frac{dy}{dx}$ لكل من الدوال الآتية: (12درجة)

$$i)\ y=x^{\sin x} \qquad ii)\ y=e^{\cos 2x}\ln(x^3+1)$$

$$iii)\ y=e^{3x^2}\tan\sqrt{x^2+5} \qquad iv)\ x^2+x\sin y=y\,e^x$$

ب) اوجد قيمة التكاملات الاتية: $i)\ \int\frac{\cos x}{\sqrt{5+\sin x}}dx \qquad ii)\ \int\frac{\ln x}{x}\,dx$ (8 درجات)

مع أطيب التمنيات بالنجاح

جامعة المنصورة كلية العلوم قسم الرياضيات الزمن : ساعتان	الفصل الدراسي الثاني	المستوى الأول: جيولوجيا – ميكروبيولوجى المادة : علم الحاسب (ع ١٠١) التاريخ: 7- 6 - 2014

أجب عن الأسئلة التالية:

السؤال الأول

أ- أوجد قيمة **X** في كل مما يأتي كل جزئية (درجتان)

(i) $(59.125)_{10} = (X)_2$ **(ii)** $(245.5)_8 = (X)_{10}$

(iii) $(A15.8)_{16} = (X)_2$

ب- أوجد قيمة **X** في كل مما يأتي (قم بالتحويل بعد إجراء العملية الحسابية في النظام المعطى) كل جزئية (٤ درجات)

(i) $(63.4)_8 \times (72)_8 = (X)_{16}$ **(ii)** $(32AF1.B3)_{16} + (A152.5)_{16} = (X)_8$

(iii) $(110101.101)_2 - (10101.1011)_2 = (X)_8$

السؤال الثاني كل جزئية (٧ درجات)

أ- ارسم مخطط سير العمليات ثم اكتب برنامج **QBASIC** مستخدما **while.....wend** لإيجاد حاصل الضرب

$$F = 2^2 \times 5^2 \times 8^2 \times ..... \times (20)^2$$

ب- ما هي مخرجات البرنامج التالي:

```
A = 1 :  B = 1
PRINT A; B;
FOR I = 3 TO 10
C = A + B
PRINT C;
A = B   :  B = C
NEXT I
 END
```

ج- ما هي مخرجات البرنامج التالي:

```
      X = 5  : Y = 1
      Z = 1
10    Z = Z*(X - Y)
      Y = Y + 1
 IF Y < X  THEN GOTO 10
     PRINT Z, X, Y
      END
```

من فضلك اقلب الورقة

السؤال الثالث كل جزئية (٧ درجات)

أ- ارسم مخطط سير العمليات ثم اكتب برنامج بلغة QBASIC ليحسب المجموع

$$S = \frac{1}{2} - \frac{3}{4} + \frac{5}{6} - \ldots\ldots + \frac{51}{52}$$

ب- ما هي مخرجات البرنامج التالي:

```
FOR I = 1 TO 4
  FOR J = 1 TO 4
    a = 5 * I + J
    PRINT a;
    NEXT J
PRINT
NEXT I
END
```

ج- أوجد ناتج كل مما يأتي مع بيان أولوية التنفيذ

(i) ((-4 + 3) * 6 - 4 ^ 2) / (6 + 5) * 3 ^ 3

إذا كانت Q = 3 and R = 5

(ii) NOT (Q = 7 OR R <> 5) AND Q + 3 * R = 0 OR R >= 0

GOOD LUCK

DR. NOURA FAKHRY *Dr. MOHAMED ABD EL-RAHMAN*

المستوى الأول - مجموعة البيولوجي - أسس تقسيم المملكة الحيوانية ع ١٠٢

Mansoura University
Faculty of Science
Zoology Department
Subject: Zoology
Code: Z102
Courses: Principles of Animal Taxonomy
Academic Year: 2013-2014

Second Term
Final Exam
1st Level Biology Program Students
Date: 14 June, 2014
Time Allowed: 2 hrs
Full Mark: 60

Answer All the Following Questions

Question No. 1. Answer the following parts: (20 marks)

I. Answer the Following: (9 Marks)

1- Compare between *Schistosoma mansoni* and *S. haematobium*. (4.5 Marks)

2- Describe the life cycle of the liver fluke. (4.5 Marks)

II. Choose the correct answer from the following: (4 Marks)

A) The infective stage of *Ascaris lumbricoides* is:

a) Larva
b) Egg with 1st stage of Rabditiform larva
c) Rabditiform larva
d) Egg with 2nd stage of Rabditiform larva

B) The Intermediate host of *Schistosoma mansoni* is:

a) *Bulinus* snail b) *Biomphalria* snail c) *Lymnea* snail d) *Pirenella* snail

C) The reproductive system of *Fasciola* consists of:

a) Bilobed ovary b) Single ovary c) Single ovary & two testes d) Numerous testes

D) The egg of *Taenia* is surrounded by:

a) Egg shell b) Embryphore c) Mammelated coat d) Egg membrane

III. Compete the following sentences: (7 Marks)

A) The body wall of *Planaria* is characterized by presence of ……. Which play an important role in 1……., 2……., 3……., 4…….

B) Male *Schistosoma* is short and has a groove called …….. where the female is embraced during ……..

C) *Schistosoma* differes from other digeneans in being ……..

D) Adult *Taenia* consists of a …… , …….. and numerous …… (……, …. and ……).

إقلب الصفحة من فضلك صفحة ١ من ٥

Question No. 2: Answer the Following : (20 marks)

Q.2A: Write the scientific expression for the following: **(5 marks)**

1. Alteration of sexual and asexual stages in the life cycle of Hydrozoans. This called .....
2. An animal that can produce both sperm and eggs is called.....
3. Cells line the walls of the central chamber, circulate water through sponge & trap food particles. These cells called .....
4. Appearance of two shapes of animal in its life cycle (polyp& medusa). This called .....
5. Type of digestion takes place in the gastric cavity with aid of enzymes which secreted by gland cells. This called .....

Q.2B: Choose the correct answer of the following: **(10 marks)**

1- A type of cell in sponges that forms hollow cylinders through which water enters the central area of the sponges is called:

A) Choanocyte. B) Amoebocyte. C) Porocyte. D) Cnidocyte.

2- How do coral animals obtain their food?

A) They have tentacles that trape food particle. B) They are photosynthetic.
C) They absorb predigested food through their cell wall from dinoflagellates which are photosynthetic. D) Both A & B

3- Annelids show advancement over the nematode in having:

A) Metameric segmentation. B) True coelom.
C) Closed circulatory system. D) A & B.

4- Anticoagulant secreted by leech is:

A) Heparin. B) Hirudin. C) Haematin. D) Hemoglobin.

5- Which of the following Phyla are not consumed for food by humans?

A) Cnidaria (jellyfish, anemones, corals, hydroids).
B) Arthropoda (insects, crustaceans, spiders, etc.)
C) Platyhelminthes (flatworms).
D) Echinodermata (starfish, sea cucumbers, sea urchins, etc).

6- *Scolopendra* is poisonous lives in Tropical regions & carnivorous; it belongs to Class:

A) Insecta. B) Crustacea. C) Archnida. D) Myaripoda.

7- The terrestrial species of *Echinodermata* is:

A) Brittle star. B) Star fish. C) Sea lilly. D) None of these.

إقلب الصفحة من فضلك صفحة ٢ من ٥

8-Which animal has bilateral symmetry?

A) Jellyfish. B) Sea anemone. C) Sponge. D) Butterfly.

9- Mollusks have shells. This sentence is:

A) False. B) Some do, some don't. C) Only bivalves. D) True.

10- Arachnids have how many body segments?

A) Four. B) Two. C) One. D) Three.

Q.2C: Complete the following: **(5 marks)**

1- The excretory units of Arthropods are .....

2- Phylum *Mollusca* is classified into ....., ..., ..., ..., ..., ..., ...

3- Main cells that you expect to find in the gastrodermis of *Hydra* would be .....& .....

4- The internal budding during unfavourable conditions of sponge is called .....

5- *Neries* moves by ..... While *Anodonta* moves by .....

==========

Question No. 3. Answer the Following: **(20 marks)**

A. Choose the correct answer from the following: **(10 marks, each statement of 0.5 Mark)**

1- How many contractile vacuoles present in *Euglena*?

A) Three B) Two C) One D) NON

2- Released from ruptured RBCS in *Plasmodium* infection.....

A) Sporozoites B) Zygote C) Haemozoin granules D) Ookinate

3- Female *Anopheles* pours saliva when biting Man to.....

A) Increase blood flow B) Prevent blood coagulation

C) Decrease blood flow D) A & B

4- He Classified animals according to the presence or absence of blood

A) Carl Linnaeus B) Aristotle C) John Ray D) MFA

5- He established the Binomial nomenclature:

A) Carl Linnaeus. B) MFA. C) Aristotle D) John Ray

6- Sexual reproduction in Protozoa occurred by

A) Binary fission B) Conjugation. C) Syngamy. D) B & C

7- Occurs in unfavorable conditions. *Amoeba* secretes a cyst of two layers for protection.

A) Binary fission. B) Multiple fission. C) Sporulation D) Conjugation

إقلب الصفحة من فضلك صفحة ٣ من ٥

8- *Amoeba* Proteus feeds on .....

A) Solid organic substances B) Soluble organic Substances

C) Blood D) Tissues of intestinal wall

9- The infective stage of *Entamoeba histolytica* parasite is the .....

A) Cyst with 8 nuclei B) Cyst with 2 nuclei C) Trophozoite D) Cyst with 4 nuclei

10- *Euglena* shows some characters of plants such as

A) Chloroplasts B) Pellicle C) Myonemes D) Binary fission

11- The infective stage of *Plasmodium* is called

A) Trophozoite B) Merozoites C) Sporozoite D) The metacyclic form

12- Sensitivity of light is achieved by ..... in *Euglena*.

A) Contractile vacuole B) Flagellum C) Chloroplast D) Eye Spot

13- Female *Culex* can't transmit *Plasmodium* because.....

A) All the forms of *Plasmodium* digested in its stomach. B) Doesn't feed on blood

C) Have no Piercing proboscis D) Have no sucking proboscis

14- Which of the following consists of true tissues?

A) Mesozoa B) Parazoa C) Eumetazoa

15- Vector of *Plasmodium* is .....

A) House fly B) Female Anopheles C) Tse Tse Fly D) Non

16- *Euglena* is considered an animal because it has .....

A) Myonemes B) Eye-spot C) Cytostome D) All of them

17- The infective stage of *Plasmodium* is stored in ..... of the female *Anopheles*.

A) Salivary glands B) Gut C) Stomach D) Gut wall

18- The individual infected with *Plasmodium* shows fever every 48hrs because of the:

A) Complete cycle in liver cells. B) Complete cycle in White blood cells.

C) Complete cycle in RBCs. D) Compete cycle in Mosquito gut.

19- *Entamoeba coli* moves by pseudopodia and the number of them is:

A) One B) Two C) Three D) Many

20- *Entamoeba histolytica* lives in .....

A) Small intestine of Man B) Large intestine of Man C) Blood D) Fresh water

إقلب الصفحة من فضلك صفحة ٤ من ٥

B. Mark (√) or (X) for the following statements: **(5 marks, each statement of 0.5 Mark)**

1- Protozoa are subdivided based upon their means of locomotion.

2- Protozoa are unicellular prokaryotic animals.

3- Encystment in Protozoa occurs under unfavorable conditions.

4- Respiration and excretion in Protozoa take place through lungs.

5- *Paramecium* moves by flagella.

6- The contractile vacuole in *Amoeba* is fixed.

7- John Ray is considered the father of Taxonomy.

8- Excystaion in *Entamoeba* is transformation of cyst to Trophozoite.

9- *Entamoeba coli* lives in fresh water.

10- There are 2 sexual cycles of *Plasmodium* occur in man's liver and RBCs.

C. Complete the following sentences with the suitable answer:

(5 marks, each space 0.5 Marks)

1- Why male Anopheles can't transmit malaria to man? ……..

2- In Malaria infection every 48 or 72 hrs a fever occurred which is a result of ……..

3- The fast movement in Euglena is achieved by ……..

4- The result of conjugation in *Paramecium* is the formation of …….. individuals.

5- He is the first to identify the species ……..

6- The Macronucleus in Paramecium is responsible for ……, and ……..
while the Macronucleus is responsible for …….

7- The Sexual cycle of *Plasmodium* in Female *Anopheles* occurs in the ……..

8- The fresh water forms of Protozoa have a ……..which regulates the osmotic pressure.

****

مع خالص تمنياتنا بالنجاح و التوفيق

د./ شادية فريد حمادة د./ محمد فتحى أبو النور د./ إيمان أحمد الشباسى

إنتهت الأسئلة صفحة ٥ من ٥

مجموعة (البيولوجي + الكيمياء الحيوية) - أساسيات علم وظائف الأعضاء (١٠٢ ن)

Mansoura University
Faculty of Science
Botany Department

جامعة المنصورة
كلية العلوم
قسم النبات

Final Examination in Botany
Second Term: May 2014

Educational Year: 1st Level **Program : Biology**
Courses: Basics of plant Physiology
Subject: (B 102) **Time :2 hrs** **Date: 10/6/2014** **Full mark: 60**

Answer the following questions:

ملحوظه: مراعاة تسلسل الاجابة كما هو فى الاسئلة.

Group (A): Colloids, Osmosis & Permeability: (30 Marks)

I: (10 Marks)

1- Viscosity, Brownian movement, Dialysis and Adsorptive power (Definition only) (4 Marks)

2-Discuss each of the following: (6 Marks)

a- Electrical properties of colloids.

b- Reversible and irreversible flocculation of colloids.

II: (10 Marks)

1- Discuss brie ly each of the following:

a- The role of osmosis in plant life. (2.5 Marks)

b- Dynamic of water movement between plant cells. (3.5 Marks)

c- The changes in osmotic parameters of a living plant cell when immersed in water only. (Write the equation)(4 Marks)

III: (10 Marks)

1- Brie ly discuss the permeability of the plasma membrane to electrolytes. (5 Marks)

2- Put right (√) or wrong (x) for the following sentences and correct the wrong: (5 Marks)

a-The permeability of non-electrolytes through protein part of plasma membrane. ( )

b- Decrease in pH, decrease in absorption of anion. ( )

c- Complete absence of oxygen, increase the permeability of cells. ( )

d- At high concentration of chloroform a reversible increase in permeability. ( )

e- Antagonism between Na^{+} & Ca^{+2} owing to competition at active sites on carriers. ( )

Group (B): Plant water relationships & Enzymes: (30 Marks)

I: (15 Marks)

1- True/False Question: Answer the following questions True (T) or False (F): (5 Marks)

a- Root pressure theory explains the ascent of sap in tall trees than 100 meters.

b- Increase in soil temperature stimulates the absorption of water from soils.

P.T.O.(من فضلك اقلب الصفحة)

c- Rate of transpiration increases with increase in the relative humidity.
d- Sand holds water more tightly than clay.
e- Closed guard cells are turgid.

2- Fill-in-the-Blank: For each of the following treatments, indicate if it will cause the guard cells to open (O) or close (C) the stoma: (5 Marks)

a-		ABA
b-		Light
c-		High (carbon dioxide) in the leaf
d-		Low pH in the cytoplasm
e-		Violent wind

3- Complete the following: (5 Marks)
a- Transpiration is the loss of water in the form of water vapour through ..... , ...and.....
b- Guttation is the loss of water in the form of water droplets from .....
c- Stagnant wind .....the rate of transpiration.
d- K^+ efflux induces stomatal .....
e- Water absorbed from soil solution by ..... and ..... mechanisms.

II: (15 Marks)
1- Explain the action of the following enzymes groups referring to de inition, one example & the equation of this example: (6 Marks)
a- lyases. b- dehydrogenases.
c- Esterases. d- Transferases.

2-Write in details an account on: (4 Marks)
a- Effect of substrate concentration on enzyme action (with drawing).
b- Non-competitive inhibitors (with examples).

3- Complete the following: (3 Marks)
a- Enzyme may be defined as.....
b- Temperature increases the rate of enzymatic reaction because of .....
c- Turnover number is defined as.....
d- Catalase is an enzyme which catalyzes.....
e- Accumulation of end products decreases the rate of enzymatic reaction due to .....
f- Most of the plant enzymes are contained in .....

4- Correct the following sentences: (2 Marks)
a- Mg^{+2} is an activator for the reaction of pyruvate kinase.
b- Minimum temperature is the degree at which the best yield of products will be produced from the substrate.
c- Peroxidase is an enzyme which catalyzes the oxidation of phenolic compounds by removing two hydrogen atoms in presence of atmospheric oxygen.
d- $CH_3\text{-}COOH + Co\text{-}A\text{-}SH + ATP \longrightarrow Co\text{-}A\text{-}S\text{-}CO\text{-}CH_3 + AMP + H_4P_2O_7$

Examiners:

Prof, Samy A. Abo-Hamed **Prof. Heshmat S. Aldesuquy**
Prof. Wafaa M. Shukry **Dr. Rasha M. Eid Gamel**

مجموعة السيتوبلازم + النواة + الكروموسومات
أساسيات علم وظائف الأعضاء (ب ١٠٢)

Mansoura University
Faculty of Science
Botany Department

جامعة المنصورة
كلية العلوم
قسم النبات

Final Examination in Botany
Second Term: May 2014

Educational Year: 1st Level **Program : Biology**
Courses: Basics of plant Physiology
Subject: (B 102) **Time :2 hrs** **Date: 10/6/2014** **Full mark: 60**

Answer the following questions:

ملحوظه: مراعاة تسلسل الاجابة كما هو فى الاسئلة.

Group (A): Colloids, Osmosis & Permeability: (30 Marks)

I: (10 Marks)

1- Viscosity, Brownian movement, Dialysis and Adsorptive power (Definition only) (4 Marks)

2-Discuss each of the following: (6 Marks)

a- Electrical properties of colloids.

b- Reversible and irreversible flocculation of colloids.

II: (10 Marks)

1- Discuss brie ly each of the following:

a- The role of osmosis in plant life. (2.5 Marks)

b- Dynamic of water movement between plant cells. (3.5 Marks)

c- The changes in osmotic parameters of a living plant cell when immersed in water only. (Write the equation)(4 Marks)

III: (10 Marks)

1- Brie ly discuss the permeability of the plasma membrane to electrolytes. (5 Marks)

2- Put right (√) or wrong (x) for the following sentences and correct the wrong: (5 Marks)

a-The permeability of non-electrolytes through protein part of plasma membrane. ( )

b- Decrease in pH, decrease in absorption of anion. ( )

c- Complete absence of oxygen, increase the permeability of cells. ( )

d- At high concentration of chloroform a reversible increase in permeability. ( )

e- Antagonism between Na^{+} & Ca^{+2} owing to competition at active sites on carriers. ( )

Group (B): Plant water relationships & Enzymes: (30 Marks)

I: (15 Marks)

1- True/False Question: Answer the following questions True (T) or False (F): (5 Marks)

a- Root pressure theory explains the ascent of sap in tall trees than 100 meters.

b- Increase in soil temperature stimulates the absorption of water from soils.

P.T.O.(من فضلك اقلب الصفحة)

c- Rate of transpiration increases with increase in the relative humidity.
d- Sand holds water more tightly than clay.
e- Closed guard cells are turgid.

2- Fill-in-the-Blank: For each of the following treatments, indicate if it will cause the guard cells to open (O) or close (C) the stoma: (5 Marks)

a-		ABA
b-		Light
c-		High (carbon dioxide) in the leaf
d-		Low pH in the cytoplasm
e-		Violent wind

3- Complete the following: (5 Marks)
a- Transpiration is the loss of water in the form of water vapour through ..... , ...and.....
b- Guttation is the loss of water in the form of water droplets from .....
c- Stagnant wind .....the rate of transpiration.
d- K^+ efflux induces stomatal .....
e- Water absorbed from soil solution by ..... and ..... mechanisms.

II: (15 Marks)
1- Explain the action of the following enzymes groups referring to de inition, one example & the equation of this example: (6 Marks)
a- lyases. b- dehydrogenases.
c- Esterases. d- Transferases.

2-Write in details an account on: (4 Marks)
a- Effect of substrate concentration on enzyme action (with drawing).
b- Non-competitive inhibitors (with examples).

3- Complete the following: (3 Marks)
a- Enzyme may be defined as.....
b- Temperature increases the rate of enzymatic reaction because of .....
c- Turnover number is defined as.....
d- Catalase is an enzyme which catalyzes.....
e- Accumulation of end products decreases the rate of enzymatic reaction due to .....
f- Most of the plant enzymes are contained in .....

4- Correct the following sentences: (2 Marks)
a- Mg^{+2} is an activator for the reaction of pyruvate kinase.
b- Minimum temperature is the degree at which the best yield of products will be produced from the substrate.
c- Peroxidase is an enzyme which catalyzes the oxidation of phenolic compounds by removing two hydrogen atoms in presence of atmospheric oxygen.
d- $CH_3\text{-}COOH + Co\text{-}A\text{-}SH + ATP \longrightarrow Co\text{-}A\text{-}S\text{-}CO\text{-}CH_3 + AMP + H_4P_2O_7$

Examiners:

Prof, Samy A. Abo-Hamed **Prof. Heshmat S. Aldesuquy**
Prof. Wafaa M. Shukry **Dr. Rasha M. Eid Gamel**

Mansoura University
Faculty of Science
Department of Physics

Time Allowed: 2 h
Date: 31 / 05 / 2014
All Programs, 2 h.
Full Mark: 60

Second Term Exam 2013-2014
Physics (102)

Constants: $K=8.99\times10^{9}(N.m^2/C^2)$, $\epsilon_0=8.85\times10^{-12}(C^2/N.m^2)$, $q_e=-1.6\times10^{-19}C$, $\mu_0=4\pi\times10^{-7}\ T.m/A$

PART – I: MCQ [12 Marks]

Conceptual Questions (from 1 to 12 : each of 1.0 Mark)

- *Do not give more than one answer to a question.- Copy the table below in your answer sheet.*

Question	1	2	3	4	5	6	7	8	9	10	11	12	Total(12)
Answer													

1) Which of the following is not a vector?
A) electric force B) electric field C) electric potential D) electric line of force

2) Electric dipoles always consist of two charges that are
A) equal in magnitude; opposite in sign. B) equal in magnitude; both are negative.
C) equal in magnitude; both are positive. D) unequal in magnitude; opposite in sign.

3) Doubling the capacitance of a capacitor holding a constant charge causes the energy stored in that capacitor to
A) quadruple. B) double. C) decrease to one half. D) decrease to one fourth.

4) Sphere A carries a net positive charge, and sphere B is neutral. They are placed near each other on an insulated table. Sphere B is briefly touched with a wire that is grounded. Which statement is correct?
A) Sphere B is now negatively charged, B) Sphere B is now positively charged. C) Sphere B remains neutral,
D) The charge on sphere B cannot be determined without additional information.

5) A negative charge is moved from point A to point B along an equipotential surface.
A) The negative charge performs work in moving from point A to point B.
B) Work is required to move the negative charge from point A to point B.
C) Work is both required and performed in moving the negative charge from point A to point B.
D) No work is required to move the negative charge from point A to point B.

6) A solid block of metal in electrostatic equilibrium is placed in a uniform electric field. Give a statement concerning the electric field in the block's interior.
A) The interior field points in a direction opposite to the exterior field.
B) The interior field points in a direction that is at right angles to the exterior field.
C) The interior points in a direction that is parallel to the exterior field.
D) There is no electric field in the block's interior.

7) A charged particle is injected into a uniform magnetic field such that its velocity vector is perpendicular to the magnetic field vector. Ignoring the particle's weight, the particle will
A) move in a straight line. B) follow a spiral path. C) move along a parabolic path. D) follow a circular path.

8) The resistivity of a wire depends on
A) its length. B) its cross-sectional area. C) the material out of which it is composed. D) all of the given answers

9) An electric current produces
A) a gravitational field. B) an electric field. C) a magnetic field. D) an electromagnetic field.

10) The direction of the force on a current-carrying wire in a magnetic field is described by which of the following?
A) perpendicular to the magnetic field only B) perpendicular to both the current and the magnetic field
C) perpendicular to neither the current or the magnetic field D) perpendicular to the current only

11) The force on a current-carrying wire in a magnetic field is equal to zero when
A) the current is parallel to the field lines. B) the current is at a 30° angle with respect to the field lines.
C) the current is at a 60° angle with respect to the field lines. D) the current is perpendicular to the field lines.

12) A capacitor stores charge Q at a potential difference ΔV. If the voltage applied by a battery to the capacitor is doubled to $2\Delta V$
A) the capacitance falls to half its initial value and the charge remains the same
B) the capacitance and the charge both fall to half their initial values.
C) the capacitance and the charge both Double D) the capacitance remains the same and the charge doubles

---

PART II [30 Marks]

Instructions for Short Answer Questions :

- *To get full marks you have to show all necessary work and Simplify your answer when possible*

1) State the Biot-savart law in magnetizm. *(3 marks)* 2) define the electrical potential at a point *(3 marks).*

3) State the law of conservation of electric charge. *(4 marks)*

4) Compare between Electric and Magnetic Force. *(5 marks)*

5) State three reasons for adding a dielectric material between the plates of a capacitor. *(5 marks)*

6) Why can electric field lines never cross? *(5 marks)* 7) State and derive Ohm's Law. *(5 marks)*

PART III [18 Marks]

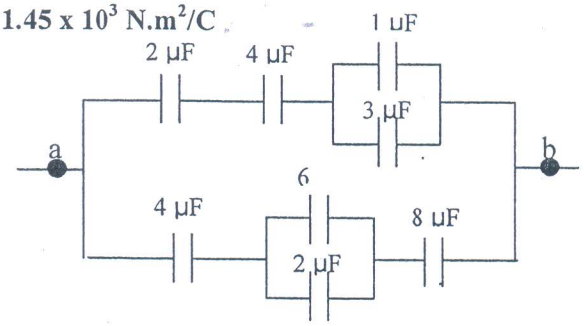
Instructions for long Answer Questions (from 1 to 6: each of 3 marks)

1) What are the magnitude and direction of the electric field at a point midway between a *(-8 μC)* and a *(+7 μC)* charge 8.0 cm apart?

2) The total electric flux from a cubical box 28.0 cm on a side is 1.45×10^3 N.m^2/C

What charge is enclosed by the box?

3) Find the equivalent capacitance between *a* and *b* for the combination of capacitors shown in Figure.



4) How much work does *9.0 V*

do in moving *8.5×10^{18}* electrons?

5) *A 15 μF* capacitor is connected to a *50 V* battery and becomes Fully charged. The battery is removed and a slab of dielectric that completely fills the space between the plates is inserted. If the dielectric has a dielectric constant of 5.0, what is the capacitance of the capacitor after the slab is inserted?

6) An electric heater is constructed by applying a potential difference of 12 V to a wire that has a total resistance of 8 Ω . Find the current carried by the wire and the power rating of the heater.

Prof. Dr. Nair Ahmed Baker, *Prof. Dr. Moustafa Tawfik Ahmed,*

Ass. Prof. Maysa Abd-Elhamed ,

Dr. Nagah El-Sheshaty, *Dr. Afaf Sarhan,* *Dr. Amal El-Sshaway*