Questions

Unit (1)

(A) Write the scientific term for each of the following:

1- The change of object's position as time passes. (……)

2- The physical quantity that is used to describe and measure the movement of objects. (……)

3- The distance covered through a unit time. (……)

4- The change of object's position by equal distances at equal time intervals. (……)

5- The change of object's position by unequal distances at equal time intervals. (……)

6- The total distance covered by the moving object divided by the total time taken to cover this distance. (……)

7- The speed of a moving object relative to the observer. (……)

8- The change of an object's speed in one second. (……)

9- The change of object's speed by equal values through equal time intervals. (……)

10- The physical quantity that has magnitude only. (……)

11- The physical quantity that has magnitude and direction. (……)

12- The actual length of the path that a moving object takes from the start point to the end point. (……)

13- The length of the shortest straight line between two positions (primary and final position). (……)

14- The distance covered by the object in a certain direction. (……)

15- The rate of change of displacement. (……)

16- The displacement covered in one second. (……)

17- The displacement divided by total time. (……)

18- The movement in a straight path. (……)

19- The thing which moves by constant velocity in the space.

(……)

20- It is the phenomenon of light bouncing off in the same medium when it meets (strikes) a reflecting surface. (……)

21- Angle of incidence = angle of reflection. (……)

22- The incident light ray, the reflected light ray and the normal to the surface of reflection at the point of incidence all lie in one plane perpendicular to the reflecting surface. (……)

23- It is the light ray that falls on the reflecting surface.

(……)

24- It is the light ray that bounces (returns back) from the reflecting surface.

(……)

25- It is the angle between the incident light ray and the normal.

(……)

26- It is the angle between the reflected light ray and normal.

(……)

27- They are reflecting surfaces for light. (……)

28- It is a piece of plane glass painted from behind with a thin layer of silver metal. (……)

29- It is a mirror that its reflecting surface is a part of a hollow sphere.

(……)

30- A mirror its reflecting (shining) surface is a part of the inner surface of the sphere. (……)

31- A mirror its reflecting (shining) surface is a part of the outer surface of the sphere. (……)

32- A mirror that converges (collects) light rays after reflection. (……)

33- A mirror that diverges light rays after reflection. (……)

34- The point of collection of reflected light rays. (……)

35- The point in the middle of the reflecting surface. (……)

36- The straight line that passes by center of curvature and the pole. (……)

37- The straight line that passes by center of curvature and any point on the mirror surface except the pole. (……)

38- The distance between the pole and the focus. (……)

39- The image that is formed as a result of intersection of the reflected light rays and can be received on a screen. (……)

40- The image that is formed as a result of intersection of the extensions of the reflected light rays and can't be received on a screen. (……)

41- The mirror that forms virtual, erect and small image for the object. (……)

(B) Give reason for:

1- Train motion is considered from the motion in one direction.

2- The object's speed increases as time decreases to cover the same distance.

3- It is difficult to measure regular speed practically.

4- The moving car seems stable to an observer moves with the same speed and direction.

5- Length & time are scalar physical quantities.

6- Force & displacement are vector physical quantities.

7- Pilots take in consideration the velocity of the wind.

8- The incident light ray which falls perpendicular on a reflection surface reflects on itself.

9- The word AMBULANCE is written in converted way on the ambulance car.

10- The stainless steel spoon in considered as a spherical mirror.

11- Each spherical mirror has uncountable number of secondary axes and only one principle axis.

12- The light ray that passes through the center of curvature reflects on itself.

13- Concave mirror is used in solar ovens and solar furnaces.

14- Convex mirror is used in side-view mirror on the passenger's side of a car.

15- The image formed by convex mirror is always virtual.

16- The object which moves with regular speed its acceleration equal zero.

17- The (distance – time) graph for an object moves at uniform speed is represented by a straight line passing through the origin point.

18- The (speed – time) graph for an object moves at uniform speed is represented by a straight line parallel to tine axis.

19- Cars and planes are usually provided with a group of counters such as speedometer.

(C) What is meant by:

1- A train covers a distance 150 km in 2 hours.

2- A car moves with uniform speed 120 km/h.

3- The speed of a car equals zero.

4- The average speed of a moving car is 40 km/h.

5- An object moves with acceleration = 5 m/s^2

6- A body moves with negative acceleration equal = -2 m/s^2.

7- A car moves at uniform acceleration = 10 m/s^2.

8- The displacement of Alexandria from Cairo is 200 km. in western north direction.

9- Average velocity of a moving car is 60 km/h.

(D) Which of the following graphs represents the movement of an object at :

1- Uniform speed.

2- Non-uniform speed.

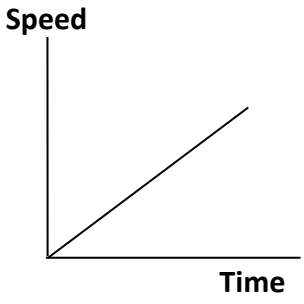
3- Uniform acceleration.

4- Increasing acceleration

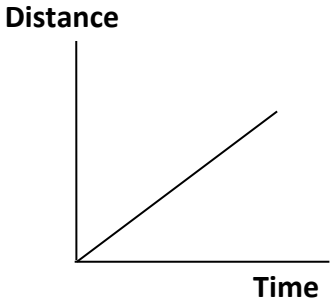
5- Decreasing acceleration.

6- Zero acceleration.

7- Rest.



(A)



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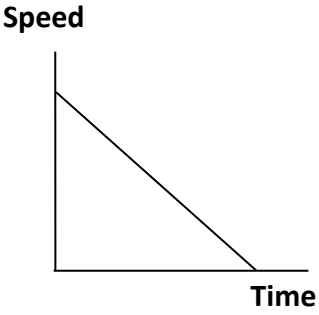

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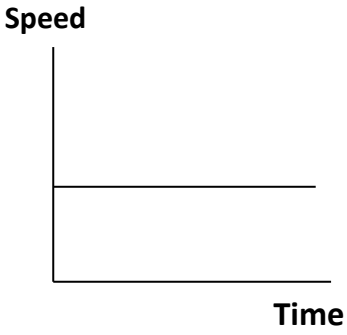
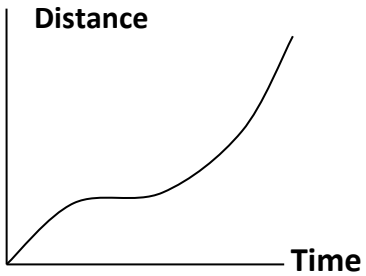
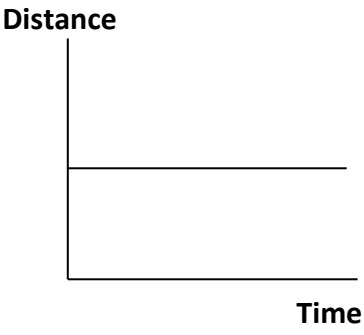


(D)



(E)



(F)

(E) Problems

1) A racer covered a distance of 100 meter in 10 sec. in a straight line then he returned back walking in 80 sec. calculate the racer's speed while running , while returning back and during the whole trip.

2) Two cars move in the same direction car (A) moves at speed 30 Km/h and car (B) moves at speed 80 Km/ h , while car (C) moves in the opposite direction at speed 40 Km/h calculate the relative speed of car (B) relative to an observer

1- Stand on the ground. 2- in car (A). 3- in car (C)

3) A train travels from Cairo to Alexandria a distance of 250 km in 2 hours find it's Speed.

4) A Boeing Plane moved from Aswan to Cairo in one hour it Covers a distance of 1000km. Calculate the reading of The Speedometer by (km/h & m/s) if you know that the Plane moves with regular Speed.

5) Two trains move parallel to each other but in opposite direction, the speed of the first train 60 km/h and the second is 90 km/h Calculate The relative speed of the first that observed by passengers in the second train.

6) If a bus moves on a straight line, it's speed change from 8 m/s. to 20 m/s. within a period of 3 sec. What is the amount of acceleration?

7) Within 2.5 sec. the speed of a car reached 65 m/s with acceleration 2 m/s^2 calculate the initial speed of the car.

8) car moves at speed 60 m/s , then the driver used the break to stop the car through 20 sec. calculate the acceleration with which the car moves and mention its type?

9) if an object moves from rest regularly until its speed reaches 10 m/s after 2 sec. from the start of moving, therefore :

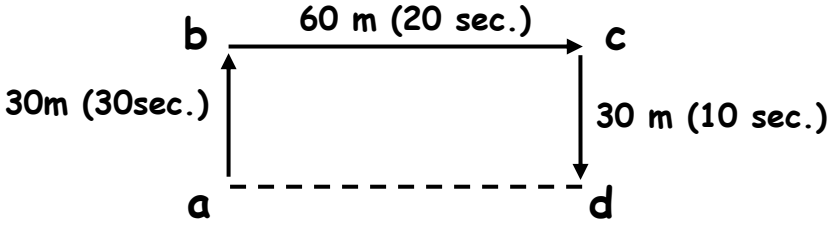
a) The change of speed through the two seconds =…….m/s

b) The change of speed through one second =…….m/s

c) Acceleration =…….m/s^2.

10) If a body starts its motion from point (a) covered 30 m. northward till point (b) within 30 sec, then 60 m. eastward till point (c) within 20 sec. then 30 m south world till point (d) within 10 sec. as shown in the figure calculate:

- The total distance.
- The total time.
- The displacement.
- the average speed & average velocity of the body.



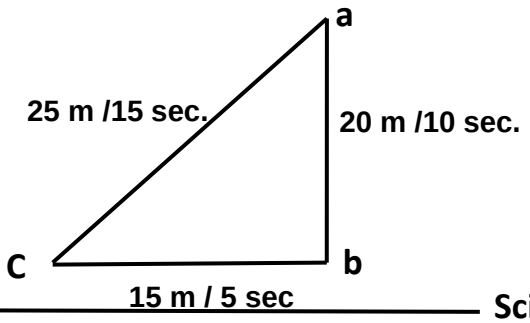
11) If a body moves from the point (a) to the point (c) passing by the point (b) then returning back to (C) as shown in the figure calculate:-

1- The distance covered by the body.

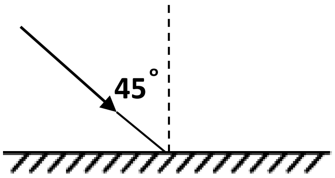
2- The displacement done by the body.

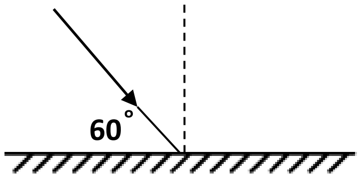
3- The average speed.

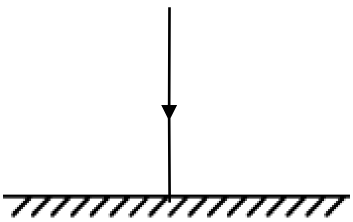
4- The average velocity.

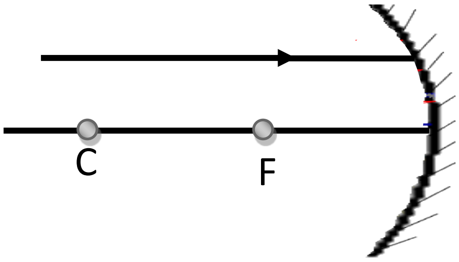


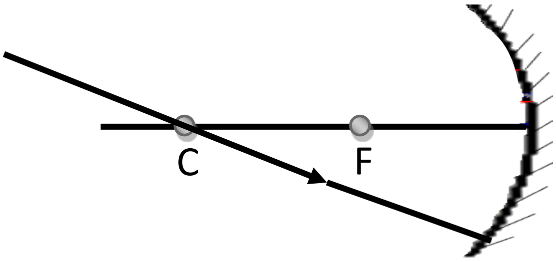
(F) Complete the following figures :-

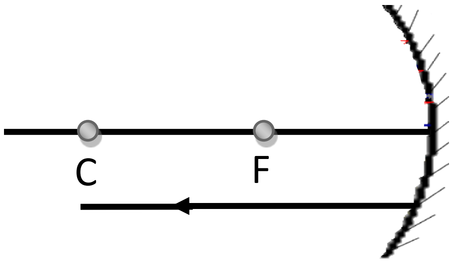


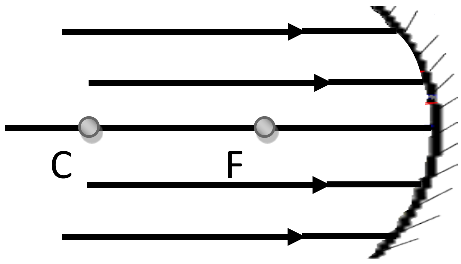


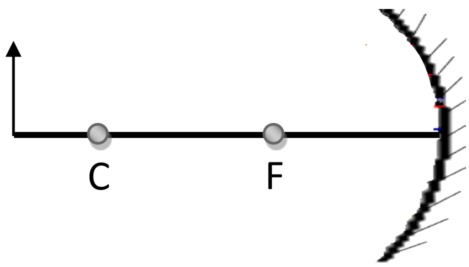


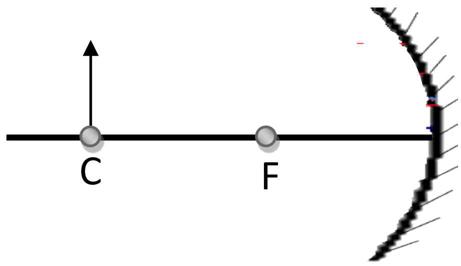


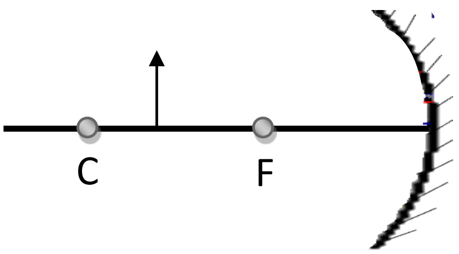


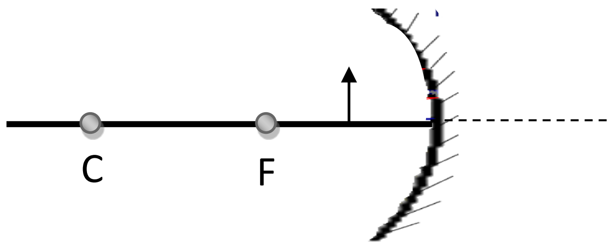












Unit (2) Light energy

(1) Give scientific term:

1- Angle of incidence = Angle of reflection. (……...)

2- The light ray that falls on reflecting surface. (……...)

3- The bouncing of light ray in the same medians.

(……...)

4- A mirror which gives virtual, erect and equal in size image for an object.

(……...)

5- A straight line connecting the center of curvature of the mirror and any point on its surface besides the poles of the mirrors.

(……...)

6- The distance between the pole of the mirror and its focus.

(……...)

7- The image formed by the convex mirror or by the concave lens can't be received on the screen. (……...)

8- A transparent medium refracts the light. (……...)

9- The lens is thick at the center and less thickness at the tip.

(……...)

10- The point inside the lens on the principal axis in the mid distance between its faces.

11- The image which is formed due to the collection of the refracted rays and can be received on a screen. (……...)

12- The vision defect in which the person can see the near objects only clearly. (……...)

13- The lens that corrects the short-sight. (……...)

14- A kind of lenses that is used instead of glasses and can stick to the eye cornea. (……...)

(2) Complete:

1- The phenomenon of the light bouncing off in the same medium when it meets the reflecting surface is called ……...

2- When a light ray falls perpendicular on a reflecting surface, its angle of reflection equals ……...

3- Mirrors are ……... surfaces for light, they may be ……... or ……...

4- Convex mirror ……... light rays after reflection.

5- The point that is in the middle of the reflecting surface of the spherical mirror is called ……...

6- ……... is any straight line that passes by the center of curvature of the mirror and any point on its surface except pole.

7- Focal length = $\frac{\text{.....}}{2}$

8- The radius of the concave mirrors equals ……... of its focal length.

9- ……... image can be received on a screen, while ……... image can't.

10- If an object put at ……... of the concave mirror, a real ……... image and equal to the object is formed.

11- To obtain a magnified erect image for your face, you should stand in front of a concave mirror at distance ……... .

12- A convex mirror has a focal vertex of 20 cm. Then half the diameter of its spherical surface equals ……...

13- The optical center is the ……... point on the principal axis through which the incident ray passes without ……...

14- The focal length of the convex lens equals the distance between ……... and ……...

15- When an object is placed between the focus and the center of curvature, the formed image is real …….. and ……..

16- The normal person can see clearly the near objects at distance less than ……..., and far objects at a distance up to ……...

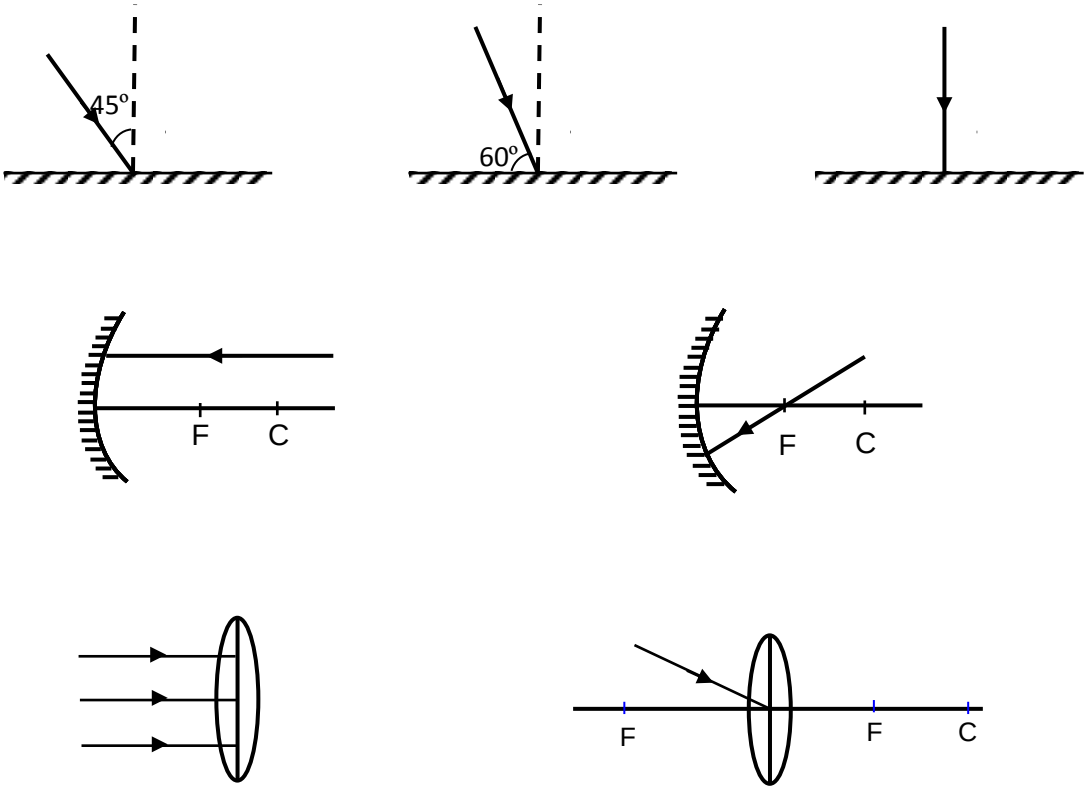
17- ……... and ……... are the most important of vision defects.

18- The reasons of short eye sightedness is ……... and ……...

19- The short sighted person needs a medical eye glasses with …….. lenses.

20- The vision defect which is due to shortness in the radius of the eye sphere is called ……...

21-



22- A long-sighted person needs a medical eye glasses with ……... lens.

23- The contact lenses are very …….. lenses made of …….. and can stick to the eye ……... by the eye fluid.

(3) Give reason for:

1- The perpendicular incident light ray on a plane mirror reflects on itself.

2- The word AMBULANC is written in a converted way on the ambulance.

3- The spoon made of silver is a spherical mirror.

4- Concave mirror is used for solar ovens.

5- The convex mirror is called diverging mirror.

6- The focal length of a spherical mirror can be determined by knowing its radius.

7- The focal vertex of the thick convex lens is less than the thin convex lens.

8- The collective lens has two foci, but the collective mirror has one focus.

9- The object that is placed at the focus of a convex lens has not an image.

10- Some persons have short-sight.

11- Concave lens is used to treat short-sighted person.

12- The retina is close to the eye in the long-sighted person.

13- The long-sightedness is treated by using a convex lens.

(4) Problems:

1) If the measure of the angle between the incident ray and reflected ray is 140, find the angle of incidence and the angle of reflection? What is the relation between them?

2) A person stands in front of a plane mirror at a distance of 10 meters. What is the distance he must move so that the distance between him and his image becomes 6 meters?

3) Find the focal length of a concave mirror that its diameter is 20 cm.

4) Explain only by drawing the formation of the image that is equal to the object by means of a convex lens.

5) A convex lens with a focal length of 10 cm an object was placed at a distance of 20 cm from the lens. Assign the distance of the object's image from the lens and mention its properties.

Unit 3: The Universe
Lesson (1)

1- Write the scientific term for each of the following:

a- It contains all the galaxies, stars and planets and living organisms.

……

b- It is located in one of the spiral arms of the Milky Way.

……

c- The expansion of the universe and the merging of atomic particles creating helium and hydrogen.

……

2- Put a check (√) in front of the correct sentences and correct the underlined words in the false ones:

a- The solar system is located in the Milky Way. ( )

……

b- The universe emerged from the particles of oxygen and nitrogen. ( )

……

c- The solar system contains many stars. ( )

……

d- Galaxies emerged from the big bang. ( )

……

3- Write a paragraph about each of the following terms:

1- Space

……

……

……

2- The universe

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……

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3- Galaxies

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4-The Milky Way galaxy

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5-Stars

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6-The solar system

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Lesson (2): The solar system

1- Write the scientific term that corresponds each of the following statements:

a- The biggest star that can be seen clearly by people on earth.

……

b- Eight planets that rotate around the sun.

……

c- A flat gaseous round disk that formed the solar system.

……

d- Force that keeps the continuity of the planets rotation in their orbits.

……

e- The two gases forming galaxies, stars &the universe.

……

f- A theory believe that the **universe matter** was a **gaseous ball** of **high pressure** and **high temperature** in a **small volume**, It is in a **constant expansion** Since about **15000 million years** (15 billion years).

……

g- A theory believe that there is **no definite end to the Universe.**

……

h- Are **group of stars** rotate together in the universe by the effect of gravity.

……

i - Distance covered by light in one year.

……

J- It is a flat gaseous round disk that formed the solar system.

……

2- Write what you know about:

a. The crossing star theory

……

……

……

……

b. The earth day

……

……

c. The earth year

……

3- What are the reasons that lead to the following?

a. The difference in the length of the year from a planet to another.

……

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b. The difference in the length of the day from a planet to another.

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……..

4- Put (√) in front of the correct sentences and correct the underlined words in the false ones:

a- The gravity of the earth keeps the rotation of planets in their orbits around the sun. ( )

……

b- The length of the day on Venus equals 59 earth days. ( )

……

c- Nine planets rotate around the sun. ( )

……

d- On Saturn, the year is 12 earth year. ( )

……

General Exercises

1- Put (√) in front of the correct sentences and correct the underlined words in the false ones:

a- The solar system is located at the edge of the Milky Way. ( )

……

b- Each group of stars is gathered in the solar system. ( )

……

c- The universe contains various galaxies that move away from each other. ( )

……

d- Eight planets including the Earth rotate around the galaxy. ( )

……

e- Galaxies rotate in a system around the centre of the universe. ( )

……

f- Saturn rotates around the sun once every 12 earthly year. ( )

……

g- Jupiter rotates around itself once every 59 earthly days. ( )

……

h- The earth rotates in a fixed orbit due to the effect of the earth's gravity. ( )

……

i- Galaxies move away in the cosmic space. ( )

……

2- Give reasons for each the following:

a- The continuous expansion of space.

……

……

……

b- The constancy of the earth's rotation in an orbit around the sun.

……

……

……

c- The difference in the year for different planets.

……

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……

d- Galaxies move away from each other.

……

……

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3- Write a paragraph that illustrates (explains) each of the following:

a- The crossing star theory

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b- The nebula

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c- The galaxy

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d- The solar system

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4- Complete the following paragraph using the following terms:

(Universe – galaxies – the cosmic – the Milky Way – the sun – the earth – the moon – the stars)

..... rotates around the earth in a fixed orbit and ..... rotate around the sun once every earthly year.

Planets rotate around .....in fixed orbits.

The solar system occupies a position at the edge of .....

We see from the surface of the earth ..... that this galaxy contains.

Galaxies move away in ..... and this expanded ..... is a cosmic space and galaxies that contain stars.

Unit (4) Reproduction

Lesson 1: Cell division

1. Complete each of the following statements :

a. The structure which contains two chromatids together is called the ……..

b. In …… cell division, the number of chromosomes is reduced.

c. …….. division only occurs in the gonads (reproductive systems) to produce gametes.

d. …….. occurs between the inner chromatids causes genetic exchange between chromosomes.

e. During …… stage of mitosis the centromeres split.

2. Put a (√) in front of the right statements & (x) in front of the wrong ones:

a. Meiotic division occurs in somatic cells. ( )

b. Meiotic division produces cells with half the genetic material. ( )

c. The crossing over phenomenon occurs in the anaphase of the 1st meiosis. ( )

3. Choose the right answers each of the following questions or completes each of the following statements.

a. As a result of mitotic cell division, a cell having 40 chromosomes gives rise to two cells each of which has a chromosome number of …….. (10 – 20 – 40 – 80)

b. A structure found during animal cell mitosis that is NOT found during plant cell mitosis is a ……..

(centrosome – cell plate – cell membrane – chromosomes)

4. Compare between meiosis & mitosis according to the following points:

Points of comparison	meiosis	mitosis
The purpose of division		
occurrence		
division phases		
division results		

Lesson (2): Asexual & sexual reproduction

1. Complete each of the following statements :

1. Growing an entire new plant from part of the original plant is called ……..
2. Uncontrolled mitotic cell division is called ……..
3. The process by which a starfish grows back a missing arm is called ……...
4. Bread mold reproduces asexually by the process of ……..

2. Choose the right answer from between brackets:

1. In the Paramecium, which is true of a daughter cell that results from fission?

a- It has one-half as many chromosomes as the parent cell.

b- It has the same number of chromosomes as the parent cell and is the same size as the parent.

c- It has twice as many chromosomes as the parent cell.

2. Reproduction by budding occurs in the ……..

(earthworm – crayfish – hydra)

3. If an organism reproduces asexually, its offspring will be ……..

(genetically identical to the parent –genetically different from each other – produced as result of fertilization – produced from specialized cells known as gametes)

4. The presence of a cancer in the lung is a direct result of ……..

(exposure to very dry air – the uncontrolled division and growth of abnormal cells – meiotic division of normal cells)

5. **Growing a crop of potatoes by placing pieces of potato having buds (eyes) in the ground is a method of reproduction known as ……**
(binary fission– vegetative reproduction – sexual reproduction – spore formation)

3. A leaf of a certain plant was placed on moist sand. Several weeks later, it was observed that young plants were growing from the edges of the leaf.

a. This method of reproduction is called ……
(regeneration –sexual reproduction –vegetative propagation –budding)

b. The chromosomes in the young plants growing from the leaf are produced by……..
(mitosis – meiosis –spores – buds)

4- Compare between sexual reproduction and asexual reproduction in terms of the genetic traits of the offspring.

……

……

……

5- Write the scientific term for each of the following:

1. A process by which the organism produces offspring with genetic traits identical to the parents. (……..)
2. It is the ability of some animals to compensate the missing parts . (……..)
3. It consists in living organisms of cells known as reproductive cells through meiosis. (……..)

6- Put a (√) in front of the correct sentences and correct the underlined words in the false ones:

a- The offspring resulted from the asexual reproduction has traits different from the original organism. ( )

……

b- Sexual reproduction maintains the genetic structure of the living organism. ( )

……

c- Amoeba is divided by the binary fission into two identical cells; each is similar to the parental cell. ( )

……

d- A bud emerges as lateral bulge in the cell then the cell nucleus divided mitotically into two nucleuses; one of them remains in the parental cell and the other one immigrates to the bud. ( )

General Exercises

1- Put a (√) in front of the correct sentences and correct underlined words in the false ones:

a- Somatic cells are divided by meiosis division which leads to the growth of living organisms and compensation of the damaged cells. ( )

……

b- Reproductive cells are divided by mitosis which leads to the formation of gametes. ( )

……

c- Chromatin reticulum intensifies and appears in the form of long, thin and double strings (chromosomes) in the telophase of the mitosis division. ( )

……

d- Meiosis results in the formation of two cells; each contains half the genetic material of the parental cell. ( )

……

e- The sexual reproduction produced living organisms similar in their genetic structure. ( )

……

f- Gametes in living organisms are produced by special cells known as the somatic cells of the meiotic division. ( )

……

2-Write the scientific terms for each of the following statements:

a- A phase in which some important vital process occur which prepare the cell for division and material in the cell are doubled.

……

b- A phase in which the chromosome migrate towards the cell equator where each chromosome is connected with one of the spindle fibers at the centromere.

……

c- A Phase where some process occurs upon which the formation of chromosome that equal in numbers with the parental cell take place.

……

d- It contributes in genes exchanging between the chromosome's chromatids and distributing them in the gametes.

……

e- A cell division that occurs in the somatic cells and results in the growth of the living organism.

……

f- The results from the combination of male gametes and a female gametes and it contains the diploid number of chromosomes (2N) of the living organism.

……

g- A type of the asexual reproduction types that occurs in unicellular living organisms.

The nucleus is mitotically divided (mitosis) and then the cell which represents the body of the unicellular organism splits into two cells.

……

3- Explain how sperms and ovum are formed in the human being?

……

……

……

4- Explain using drawing the crossing over phenomenon and its role in the variation of genetic traits among members of the same species.

……

……

……

……

Model Answers

Unit (1)

A) Write the scientific term:

1- motion
2- speed
3- speed
4- uniform "regular" speed
5- Non-uniform "irregular" speed.
6- Average speed
7- relative speed
8- Acceleration
9- Uniform acceleration
10- Scalar physical quantity
11- vector physical quantity
12- Distance
13- Displacement
14- Displacement
15- velocity
16- velocity
17- Average velocity
18- simplest form of motion
19- Light
20- Light reflection
21- first law of light reflection
22- Second law of light reflection
23- Incident light ray
24- Reflected light ray
25- Angle of incidence
26- Angle of reflection
27- Mirrors
28- Plane mirror
29- spherical mirror
30- Concave mirror
31- Convex mirror
32- Concave mirror
33- convex mirror
34- Focus
35- pole of mirror
36- Principal axis of the mirror
37- Secondary axis of the mirror
38- Focal length of the mirror
39- Real image
40- Virtual image
41- convex mirror

(B) Give reason:

1- Because train moves in straight line forward or backward but it doesn't move upward or downward.

2- Because speed = $\frac{distance}{time}$, so speed is directly proportional to the distance.

3- Because car's speed changes according to traffics.

4- Because relative speed equals zero.

5- Because they have magnitude only & have no direction.

6- Because they have magnitude & direction.

7- Because when the plane flies against the wind direction, it consumes more fuel than when it flies in same direction of wind.

8- Because angle of incidence = angle of reflection = zero.

9- In order to appear in the mirrors of the cars infront of the ambulance car written in a correct way & can be read by the drivers.

10- Because its inner surface is a concave mirror, while its outer surface is a convex mirror.

11- It has one principal axis, because it has one centre of curvature & one pole, while it has uncountable number of secondary axes because any straight line passes by its center of curvature except the principal axis is considered a secondary axis.

12- Because it falls perpendicular to the spherical mirror so its incidence angle equals zero.

13- To collect large amount of the solar energy in the focus of the mirror for cooking food.

14- Because it forms an erect, virtual & smaller image for the way behind the car.

15- Because it formed behind the mirror from the intersection of the extensions of the reflected light rays & can't be received on a screen.

16- because the speed of object is constant, so there's no change in object's speed.

17- Because object moves equal distances at equal intervals of time.

18- Because the object's speed remains constant as time passes.

19- To help us in identifying the speed of cars & planes directly.

(C) What is meant by:

1- The speed of the train is 75 km/h.

2- The car covers 120 km every one hour.

3- The car is at rest.

4- The total distance covered by the car divided by the total time taken to cover this distance equals 40.

5- The body's speed increases by 5 m/sec. each one second.

6- The body's speed decreases by 2 m/s each one second.

7- The body's speed changes with (10 m/s) equal values through equal periods of time.

8- The length of shortest straight line between Alexandria & Cairo in western north direction equals 200 km.

9- The rate of change of displacement of the car is 60 km/h.

(D)

1- (B) , (D) 2- (E) 3- (A)

4- (A) 5- (C) 6- (D)

7- (F)

(E) Problems

1) V (while returning) = $\frac{d}{t} = \frac{100}{10}$ = 10 m/s

V (while walking) = $\frac{d}{t} = \frac{100}{80}$ = 1.25 m/s

$\overline{V} = \frac{100+100}{10+80}$ = 2.2 m/s

2) 1- relative speed = 80 km/h

2- relative speed = 80 – 30 = 50 km/h.

3- relative speed = 80 + 40 = 120 km/h.

3) V = $\frac{d}{t} = \frac{250}{2}$ = 125 km/h.

4) Speed = $\frac{d}{t} = \frac{1000}{1}$ = 1000 km/h.

= 1000 × $\frac{1000}{60\times60}$ = 277.7 m/s

5) Relative speed = 90 + 60 = 150 km/h

6) a = $\frac{final\ speed - initial\ speed}{t}$

= $\frac{20-8}{3}$ = 4 m/s^2

7) t = 2.5 sec. v_2 = 65 m/s , a = 2 m/s^2

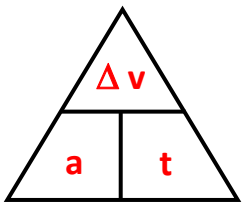
$\Delta v = axt$

$= 2.5 \times 2 = 5$ m/s

$\Delta v = v_2 - v_1$

$v_1 = v_2 - \Delta v$

$= 65 - 5 = 60$ m/s



8) V_1 = 60 m/s , V_2 = 0 , t = 20 sec.

$a = \frac{v_2 - v_1}{t} = \frac{0-60}{20} = -3\ m/s^2$ (-ve acceleration or deceleration)

9) V_1 = 0 , V_2 = 10 m/s , t = 2 sec.

a) $\Delta V = V_2 - V_1 = 10 - 0 = 10$ m/s

b) $\Delta V = 5$ m/s

c) $a = \frac{10-0}{2} = 5\ m/s^2$

10)

- Total distance = 30 + 60 + 30 = 120 m
- Total time = 60 sec.
- Displacement = 60 m in east ward direction
- $\bar{V}$ (average speed) = $\frac{total\ distance}{total\ time} = \frac{120}{60} = 2$m/s
- Average velocity = $\frac{total\ displacement}{total\ time}$

$= \frac{60}{60} = 1$m/s in east ward direction

11) 1- distance = 20 + 15 = 35 m

2- displacement = 25 m in direction $\overrightarrow{AC}$

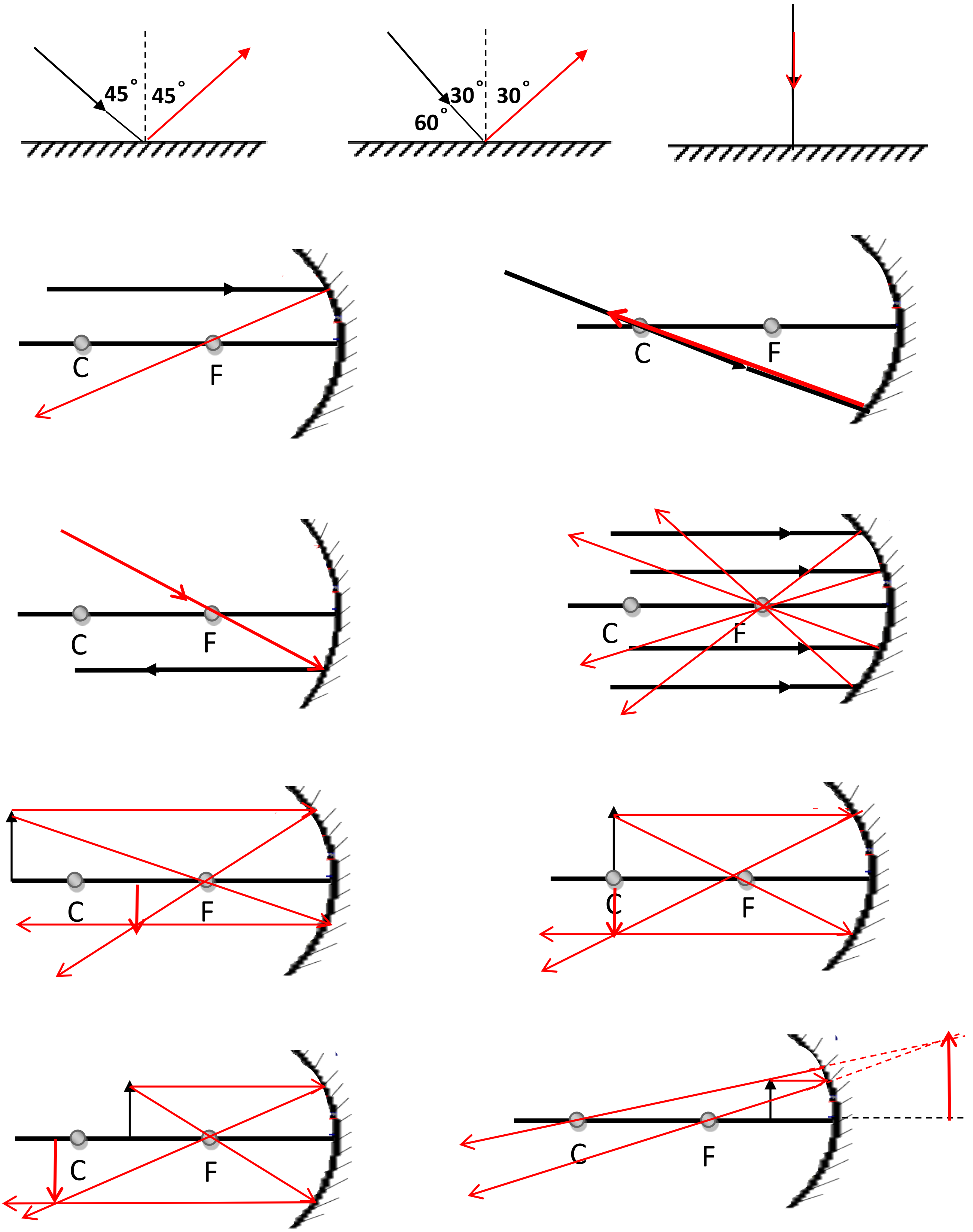
3- Average speed = $\frac{total\ distance}{time}$

$= \frac{35}{15} = 2.3$ m/s

4- Average velocity = $\frac{total\ displacement}{time}$

$= \frac{25}{15} = 1.6$ m/s in direction $\overrightarrow{AC}$

(F) Complete the following figures:



Unit (2)

(1) Give the scientific term:

1- 1st law of light reflection

2- reflecting light ray

3- reflection of light

4- plane mirror

5- secondary axis of mirror

6- focal length

7- virtual image

8- the lens

9- convex lens

10- optical center

11- real image

12- short sight

13- concave lens

14- contact lenses

(2) Complete:

1- light reflection

2- zero

3- reflecting, plane and spherical

4- diverge

5- pole of the mirror

6- secondary axis of mirror

7- $\frac{radius}{2}$

8- twice

9- real , virtual

10- center , inverted

11- Less than focal length

12- 40 cm

13- mid - refraction

14- focus , optical center

15- magnified and inverted

16- 25 cm , 6 meters

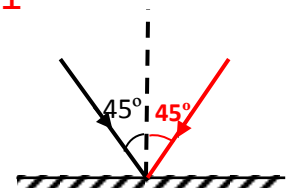
17- short sight , long sight

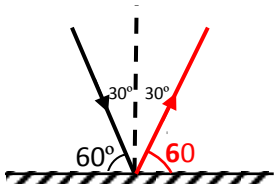
18- the increase in the eye ball diameter , increase the convexity

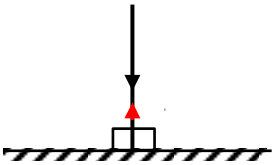
19- concave lenses

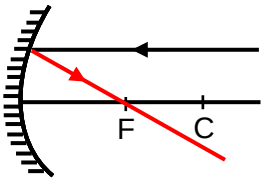
20- long sightedness

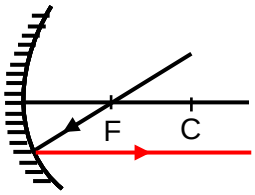
21-

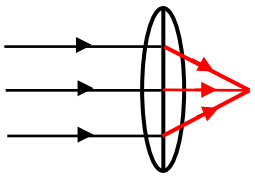


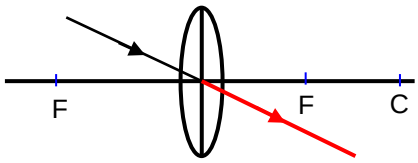












22- convex lens

23- thin , plastic , cornea

(3) Give reason for:

1- Because incidence angles = angle of reflection = zero

2- To be seen erect by plane mirror of the car behind it.

3- Because it consists of two faces the forward face concave mirror but the back is convex mirror.

4- Because it collects the sun rays in a focus so it can cook food faster.

5- Because it diverge the rays after reflection and forms virtual image.

6- Because the radius = 2 × focal length.

7- Because radius of thin lens is bigger than that of the thick lens.

8- Because convex lens has two circular surfaces, but the concave mirror has one circular surface.

9- Because the rays from a lens doesn't meet as they are parallel to each other.

10- Due to:

- The increase in the eye ball diameter.
- The increase in convexity of the eye lens surface.

11- Because convex lens collects rays before the eye to forming it on the retina.

12- Due to the decrease of the eye ball diameter.

13- Because the convex has collects the rays, so the image of the object is formed on the retina

(4) Problems:

1) = 70°

Incidence angle = reflect angle

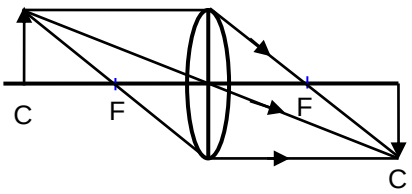
2) 7 meter

3) diameter = 4 focal length $r = \frac{1}{2} d$

OR

Focal length = $\frac{20}{4}$ = 5 cm $r = \frac{1}{2} \times 20 = 10$ cm , $F = \frac{1}{2} r = 5$ cm

4)



5) The distance = 20 cm

Its properties: real – inverted – equal to object

Unit (3) Lesson (1)

(1)

a) universe b) solar system c) big bang

(2) a) √

b) x hydrogen & helium

c) ×

d) √

(3) 1) The school book P 54.

2) The school book P55.

3) The school P55.

4) The school P55.

5) They are shiny bodies emit heat & light.

6) The school P56.

Lesson (2)

1) a) sun b) solar system

c) nebula

d) central gravitational force e) hydrogen & helium

f) big bang g) open universe theory

h) galaxy i) light year

j) Nebula

2) a) P65

b) The time taken to make the earth rotates around its axis.

c) The tine taken to make the earth rotates around the sun.

3) a) The distance between the planet & the sun.

The speed of the planet around the sun.

b) The radius of the planet.

The speed of the planet around its axis.

4) a) (x) sun b) (x) mercury

c) (x) 8 d) (x) Jupiter

General (ex.)

1) a- √ b- x galaxy c- √
d- x sun e- √ f- x Jupiter
g- x 0.41 h- sun gravitational force
i- √

2) a) Due to galaxies move away from each other.
b) Due to the effect of the universal gravitational force.
c) Answered before.
d) Due to the continous expansion of the space.

3) a) The school book 65.
b) A phere of gas (mixture of He – H_2) & dust (iron- rocks – ice).
c) A group of million of stars that rotate around the center of the galaxy.
d) The sun & eight planets revolve around the sun & is located on the edge of the solar system.

4) The moon – the earth – the sun – milky way – the stars – cosmic space – universe.

Unit (4) Lesson (1)

1) a- chromosomes b- meiotic
   c- meiotic d- crossing over
   e- Anaphase

2) a- x b- √ c- x

3) a- 40
   b- centrosome

4) The booklet P89.

Lesson (2)

1) a- vegetative reproduction
   b- cancer
   c- regeneration
   d- sporogony

2) 1- (b)
   2- hydra
   3- genetically identical to parent.
   4- un controlled division & growth of abnormal cells.
   5- vegetative reproduction

3) a- vegetative production
   b- mitosis

4) The booklet P102.

5) 1- Asexual reproduction
2- regeneration
3- gametes

6) a- x sexual reproduction
b- x asexual reproduction
c- √
d- √

General Exercise

1- a- x mitosis b- x meiosis c- x prophase
d- x 4 cells e- x asexual
f- x reproductive cells.

2- a) Interphase
b) metaphase
c) telophase
d) crossing over
e) Mitosis
f) zygote
g) binary fission

3- The school book P88.

4- The school book P82.

Good Luck