

Question 1 ( 15 marks )

A-Choose the correct answer and write it only in your answer paper ( 8 )

- ..... Hormone is known as Oestradiol. ( FSH - LH - relaxin - estrogen )
- The total no. of articulating (separate) vertebrae in human vertebral column is .....  
( 7 - 12 - 24 - 33 )
- Secretion of parathormone hormone increases as the conc. of .... in blood decreases.....  
( Na - K - Ca - Fe )
- Gametes of plasmodium malaria are produced in .....  
( mosquito stomach - mosquito salivary gland - human blood - human liver )

B- Draw a labeled diagram to show the steps of spermatogenesis with drawing .( 3 )

C- Compare between : ( 4 )

Calcitonin and parathormone hormones .

2- Actin and myosin filaments .

Question 2:

A- Write the scientific term : ( 6 )

- Type of twins born attached to each other at any body part . Siamese twins
- The ability of female gamete to grow without fertilization by male gamete as in some experiments done on frogs . Artificial parthenogenesis
- Cells inside human testes that have immune to help sperms to resist microbes. Sertoli cells

- Use the diagram to answer : ( 5 )

What is the name of this system and how it is adapted to pregnancy ? ( 2 )

What is the no. of organ that :

If destroyed natural delivery never happens . Fallupian tube

Expand during delivery .

c- Fertilization happens inside it . Fallupian tube

- Draw a labeled diagram to show the structure of skeletal muscle ( 4 ) ?

Question 3 ( 15 )

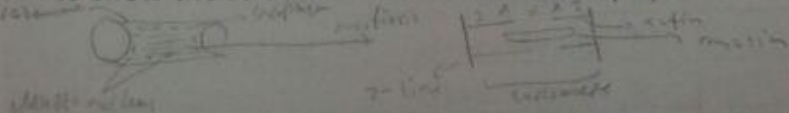
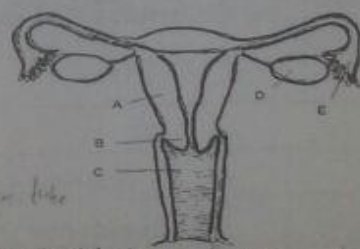
- GRF: ( 6 )

Twining of tendrils around support in pea plant . Mitigation of auxins - auxin pea stem

Occurrence of exophthalmic goiter in some individuals . Impaired secretion of thyroid hormone and enlargement of thyroid

①

are the function of thyroid .



3. Occurrence of skeletal muscle fatigue. *accumulation of lactic acid due to repeated rapid muscle contraction*

B- What is meant by ( 4 )

*fisher → telodermis → telodermis → telodermis*

1- Tissue culture *very low → 20%*

2- pulling roots

*myoblasts in the inner surface of skin and bulbs, where they attach to pull them to suitable depth in the soil to be able to protect active roots from winter*

C- Draw a labeled diagram to show the stages of plasmodium malaria in infected human blood film. ( 5 ) ?

Question 4: ( 15 )

A- Re- write the following statement after correction of under lined words ( 8 )

1. The scientist who explained sliding filament theory for skeletal muscle contraction was Claude Bernard. *Huxley*
2. Over secretion of growth hormone after puberty causes cretinism. *acromegaly*
3. If the outer whorls of flowers can't be differentiated from each other, they are called inflorescence. *polymath*
4. The light bands of myofibril are A bands. *I*

B- What is meant by test tube baby technique? Write brief account and explain your answer by drawing ? ( 4 )

C- Movement in human doesn't depend on muscle contraction and relaxation only, but requires cooperation of other systems. Discuss? ( 3 ) *since it depends on skeletal shape, nervous system that stimulate muscular system to contract and relax*

Question 5: ( 15 )

A- What happen with explanation: ( 6 )

1. Rupture of Achilles tendon. *change from hard to soft movement*
- 2- Stop of cytoplasmic streaming in living cells. *stop in higher animals and death of cell*
- 3- Disturbance in sex hormones produced from gonads and adrenal cortex. *imbalance in the level of sex hormones leading to feminization of male and masculinization of female*

B- Match , then complete sentence ( 6 )

A	B
1- First vertebra attaches to floating rib	(6) vertebra no. 30
2- found in the middle of cervical vertebrae	(3) vertebra no. 25
3- the first flat and broad vertebra	(7) vertebra no. 22
4- vertebra in the middle of vertebral column	(1) vertebra no. 18
5- vertebra in the middle of lumbar vertebrae	(4) vertebra no. 17
6- The first small and fused vertebra.	(2) vertebra no. 4
	( ) vertebra no. 27

C- What is meant by sarcomere ( muscle piece ) does its length change during contraction ?



Question 1 ( 15 marks)A-Choose the correct answer and write it only in your answer ( 8)

- 1-The secretion of .....hormone increases when food reaches the stomach.  
(cholecystokinin - secretin - Gastrin - all the previous )
- 2-The area that disappear during contraction of muscle fibre is..... ( Z - A - I - H )
- 3-Human liver is affected by ..... ( insulin - adrenaline - glucagon - all )
- 4-No. of ligaments that connect between femur and fibula bone is .....( 1- 2-3-4 )

B-Mention the site and function of : ( 4)

- Site: formed from spore mother cell inside sub of sporophyte  
 - Spores of Polypodium function: divide by mitosis to form green heart like structure called gametophyte that forms gametes then eggs to form zygote to complete the cycle

C - Use the diagram to answer: ( 3)

- 1-Does this diagram represent axial both since it contains petiole and girdle and skeletal or appendicular or both? Why?   
Skeletal and appendicular
- 2- Mention the hormones that affect on this structure and their importance?   
Growth: elongation, relaxation, opening of leaf, cytokinin, gibberellins, auxin, abscisic acid, etc.

Question 2:A- Write the scientific term: ( 8)

- 1-The hormone that its over secretion causes bone softness (fragile) . parathyroid hormone
- 2- Connective tissue that connects gastrocnemius muscle to heel bone. Achilles tendon
- 3- Bony process that extends downwards from bony ring of vertebra. Neural spine
- 4- Neural hormone produced from pituitary gland and affect on other glands in the body . Pituitary hormones

B- GRF: ( 4)

- 1- Presence of cholinesterase enzyme in neuromuscular junction.

- 2-The function of micropyle differs in ovule and seed.   
Ovule → fertilization  
Seed → Passage of food and water for fertilization

C- Draw a labeled diagram to show : ( 3)

- 1- Knee joint
- 2- L.S in mature plant ovary

Question 3 ( 15)A- How true, giving reason for your answer: ( 6)

- 1- Importance of insulin hormone in food assimilation ( metabolism )   
Stimulates body to absorb food and store as glycogen, stimulates liver to release glucose → glycogen
- 2- Muscle relaxation does not nerve impulses. ( energy )   
Since due to release of cholinesterase → breaks and inhibits → relaxation

- What is the difference between :

- Nucellus and endosperm

- Explain

Jump in adrenal cortex  $\rightarrow$  increase in level of sex hormones

- Appearance of male characters on some females.

The aim of pollination in fern plant differs than that in flowering plant.  
Flowering Plant  $\rightarrow$  produce fruits and seeds

Question 4 fern plant  $\rightarrow$

- Match, then complete sentences. ( 6 )

A	B
ADH	(3) control growth and protein synthesis
ACTH	(9) stimulates formation of corpus luteum
GH	(1) stimulates contraction of blood vessel.
FSH	(2) stimulates adrenal cortex to produce its hormones.
LH	(6) stimulates thyroid gland to produce its hormones.
TSH	( ) stimulates mammary glands to produce milk .
	(4) stimulates testes to produce sperm.

- Compare between :

Graafian follicle and seminal vesicle

seminal  
male  
seed sperm

follicle  
female

produce estrogen for men  
anastomosis

Progesterone and testosterone .

- What is the result of :

infertile  $\rightarrow$  high temp  $\rightarrow$  sperm die

Presence of testes inside the body of adult male.

Putting of frog ovum in salt solution .

activation  $\rightarrow$  fertilization  $\rightarrow$  new individual

Question 5: ( 15 )

Re- write the following statement after correction of under lined words ( 8 )

The no. of bones in thoracic cage and pectoral girdle is 33 bones. 41

typo secretion of thyroxin hormone before puberty causes myxoedema. ( cretinism )

the largest no. of vertebrae are found in sacral region . thoracic

the no. of cavities in the appendicular skeleton is 8 . 6

explain the importance of presence of mitochondria in sperms ( 2 )

give them energy for movement

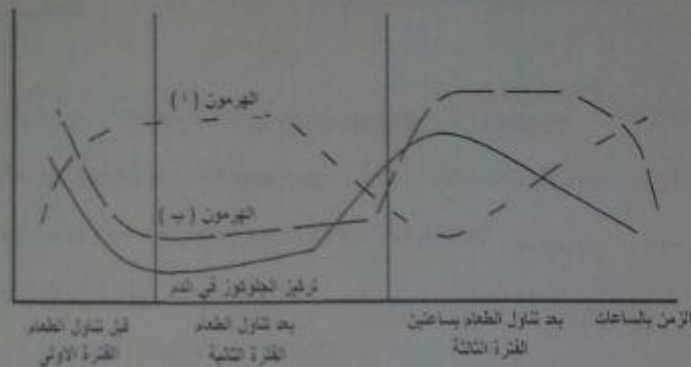
- the following diagram show conc. of some hormones in human blood , answer the attached questions.

- What is the name of hormones A and B ? Mention the cells that secrete them?

A: insuline → beta cells in Pancreas

B: glucagon

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Ministry of Education

Experimental exam 2016 ( Model 3 )

### Question 1 ( 15 marks)

A-Choose the correct answer and write it only in your answer ( 8)

- 1- The eaten part in apple fruit is ..... (ovary - carpals - receptacle - anther )
- 2- Hardening of the two integuments in dicot plants produces .....  
( fruit - micropyle - testa - 2 cotyledons )
- 3- If menstruation cycle in adult female starts 20 th. of September , the ovum releases from the ovary on..... . ( 25 sep. - 30 sep. - 4 October - 10 October )
- 4- Female of honey bee are produced from ova of .....  
( un fertilized worker - unfertilized queen - fertilized worker - fertilized queen )

B- Write the site and function of : (2)

- 1- glenoid cavity
- 2- prostate gland

C- Explain how scientists discovered the functions of endocrine glands.

### Question 2:

A- Write the scientific term : ( 6)

- 1- The site of attachment of terminal branches of motor nerve fibre with muscle fibre . neuromuscular junction
- 2- Round bone in front of knee joint . patella



3 - Use the diagram to answer : ( 5)

1- Which hormones produced by structure D ? *estrogen, progesterone*

2- What is meant by structural support ? *keeping shape by absorption of water by osmosis*  
 mention its importance for plants ? (5) *keep shape, photosynthesis*



Question 3 ( 15)

A- GRF: ( 6)

- 1-Regeneration in hydra differs than regeneration in human. *hydra has totipotency, restricted to tissues*
- 2- Human produces large no. of sperms. *Sperm exposed to less and damage*
- 3- Human placenta is considered as endocrine gland. *Produce progesterone in blood*

B- What is meant by ( 4)

- 1- Breeding cycle in mammalian animals. *Cycle when ovum is active*
- C- Explain method used to reduce extinction of rare animals and controlling the sex of embryo. *Gamete bank, applications*

Question 4: ( 15)

A- Re- write the following statement after correction of under lined words ( 8)

- 1- The scientist who discovered plant hormones Starling. *B. Jensen*
- 2- Fertilization of mature ovum happened in the uterus. *in oviduct*
- 3- Ossification of bones happens in the first stage of embryonic development. *1st*
- 4- Glenoid cavity is found between ilium and ischium where the head of femur fits. *acromioclavicular*

B- Although beta and alpha cells are found in pancreas, they have different functions and structure, explain the difference between them. *beta -> insulin secretion, alpha -> glucagon secretion*

C- One of skeletal muscles contain 20 bundles, each bundle contains 80 muscle fibre, mention the no. of motor units, no. motor nerve fibre and the no. of neuromuscular junctions. *20, 1600, 1600*

Question 5: ( 15)

A- What happen with explanation: ( 6)

- 1- Transmission of gametocytes from infected person to female anopheles mosquitoes *still similar to malaria*
- 2- Smearing of flower stigma with powder of pollen grains. *pollen grains stick to stigma*

Question 1 ( 15 marks)1- Choose the correct answer and write it only in your answer ( 8)

1- If the no. of chromosomes in the nucleus of pea plant is 7 pairs , the no. of chromosomes in the tube nucleus will be ..... ( 7 - 21- 7 pairs - 14 pairs )

2- Second meiotic division happens in .....

Graafian follicle - endometrium - fallopian tube - uterine cavity)

3- If the no. of chromosomes in the generative nucleus is x , the no. of chromosomes in male nucleus will be ..... (  $\frac{1}{2} x$  - x - 2 x - 3 x )

4- ..... hormone increases in pregnant female .

aldosterone - progesterone - estrogen - prolactin )

3- Mention the site and function of : ( 4)

1- Spores of Polypodium *Site: leaf base and stem. Spore mother cell. Function: form gametes. Phyto - zoogamete*

2- Use the diagram to answer: ( 3)

1- Mention the no. that indicates

a- Interior ventral bone *8 - Phalanges*

b- Dorsal bone *1 - Vertebra*

c- Posterior ventral bone *3 - Metacarpals*

d- Site where head of femur fits. *1 - Acromioclavicular joint*

Question 2:1- Write the scientific term : ( 6)

1- The proper store of energy in the muscle . *Myoglobin*

2- Cells that produce fluid to feed the sperms . *Sertoli cells*

3- Zygote of spirogyra surrounded with thick coat. *Zygospore*

4- Part responsible for formation of fruit in apple. *Receptacle*

2- GRF: ( 6)

1- Occurrence of conjugation in spirogyra algae. *Volvox conjugation (comp. - order)*

2- Formation of polar body in the beginning of maturation phase of oogenesis. *In ovule by meiosis and form another polar body by the second division*

3- What is the kind of asexual reproduction in each of the following :

Amoeba - binary fission - bacteria - Polypodium - aphid insect - mushroom

### Question 3 ( 15)

- How true, giving reasons. : ( 6)

- One hormone may affect different body tissues. *True, adrenaline*
- All joints contain synovial fluid. *Not true, fibrous → skull Cartilaginous → vertebrae*
- All hormones consists of proteins. *Not true → Adrenal cortex (steroids)*
- What is the difference between ( 6)

- Acrosome and corpus luteum. *acrosome : in sperm in male dissolves hülle which is*

- Explain: *[-1 : in female ovary, produce Progesterone keep thickness of endometrium*

- Maturation of fruits leads to discontinuity or death of some plants. *decomposition of food and inhibition of hormones*
- Regeneration is not considered as reproduction in some organisms.

*restricted to some but parts of some tissues*

### Question 4: ( 15)

- Re- write the following statement after correction of under lined words ( 8)

Living organism that reproduces sexually under unsuitable conditions is Amoeba. *Yeast*

The hormone that its secretion increases when maturation of ovum is completed is estrogen. *Progesterone*

- What is the result of :

Presence of testes inside human body in adult male. *fertility*

Compare between: *Dihydrosterone* *Progesterone*  
- female *male*  
- female *male features*

### Question 5: ( 15)

Correct the underlined words :

- GF secretes cortisone hormone to stimulate the growth of endometrium. *cortisol*

- Egg cell found between antipodal cells in the embryonic sac. *syndria*

Explain the importance :

Flower petals *Plutea internal organs* 2- rhizoids in Polypodium *fixation and absorb food and water*

Define : ( 3)

Glucagon 2- insulin and the function of each. *two hormones*



Question 1 ( 15 marks)

Choose the correct answer and write it only in your answer

Gestation period in cattle is ..... month. ( 5- 9 - 6- 11 )

..... is considered as respiratory system for embryo in the uterus .

( lungs - amnion - chorion - placenta )

Pelvic girdle consists of two identical halves attached ventrally through .....  
( acetabulum - ischium - pubic symphysis - patella )

Mammary glands are stimulated to produce milk by .....  
( ovary - adrenal cortex - parathyroid gland - pituitary gland )

Dwarfism is due to .....

( over secretion of growth hormone in childhood -- hypo secretion of growth hormone in childhood -hypo secretion of growth hormone in adult - hypo secretion of thyroxine hormone in childhood )

The hormone that increases absorption of salts as Na from kidney is .....

( parathormone - aldosterone - ovary - ADH )

Male organs in Adiantum is .....( ovary - antheridium - Archegonium - anther )

All the following belong to upper limbs except.....( fibula - humerus - carpals - ulna )

Use the diagram that represents section in human testes to answer:

Mention the no. that represents primary spermatocytes

What is the no. of chromosomes in cell 3 ?

Explain the reason of aggregation of sperms around cell 7 ?

Compare between :

Effect of FSH and LH in male and female.

Wrist bones and ankle regarding to no. and location of bones.

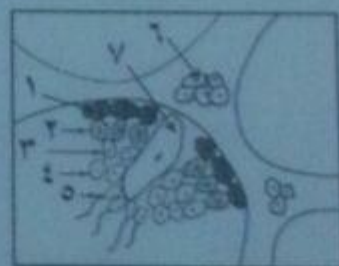
Question 2:

Write the scientific term : ( 6)

Gland that consists of two parts, found below prostate gland and produces fluid to feed sperm. *Coagula*

Curved bone attaches dorsally to centrum and transverse process of vertebra. *11*

The infective stage of plasmodium for human. *sporozoite*



- Nutritive tissue around the embryonic sac of the ovule. *nucellus*
- Hormone secreted when the level of Ca increases in blood. *calcitonin*
- The ability of female gamete to produce new individual without fertilization. *parthenogenesis*
- Explain:
  - 1- Zygospore of spirogyra divides by meiosis after fertilization. *to be like parent (A)*
  - 2- Individuals produced from natural parthenogenesis may be haploid or diploid. *nucellus*
  - Feeding of sperms inside the testes differ from feeding outside it. *in testis, cells*
- Draw a labeled diagram to show the structure of myofibril. *muscle fiber, sarcomere, myofibril*

### Question 3

- Match, then complete sentence ( 6)

A	B
- male gamete produced by mitosis in gonads	( ) Acrosome
- female gamete produced by meiosis in gonads	( ) gametophyte
- female gamete produced by mitosis in gonads	( ) sporophyte
- Haploid structure in fern plant.	( ) ovum of queen of honeybee
- diploid structure in fern plant	( ) ovum of aphid insect
	( ) sperm of male honeybee

### - GRF:

- Occurrence of exophthalmic goiter in some individuals. *hyperthyroidism*
- Presence of girdles between limbs and axial skeleton. *connective tissue*
- Insulin hormone has an important role in regulating of glucose in blood. Discuss. *low glucose in blood*

### Question 4: ( 15)

- Re- write the following statement after correction of under lined words

Male hormone (androgen ) in human secreted from seminiferous tubules in testes. *interstitial*

No. of free vertebrae in human vertebral column is 11 vertebrae. *24*

Pelvic bone consists of two identical halves attached ventrally through acetabulum. *pubis, ischium*

Thyroxin hormone stimulates ejection of milk from mammary glands during lactation. *prolactin*

No. of floating ribs is 3.



- side connect thoracic cage to thoracic vertebrae  
function: binding the cage
- Mention the site and function of :  
 Nucellus <sup>around embryo sac</sup> 2- ribs 3- foramen magnum <sup>ends of skull</sup>  
 feet of
- Draw labeled diagram to show structure of human vertebra.

### Question 5: ( 15)

- What happen with explanation?

- Pregnant female tolerates alcohol and also smoker. <sup>will be transferred to fetus</sup>
- Over secretion of growth hormone after puberty. <sup>is abnormal</sup>
- Absence of cilia from fallopian tube. <sup>No Ovary → infertile</sup>

- 1- What is meant by <sup>terminal branch and subterminal</sup> Neuromuscular junction

- 2- Physiological support <sup>keeping plant shape by absorption of water by osmosis</sup>

Embryo inside the uterus is surrounded with 2 membranes., mention these membrane and their functions. <sup>Chorion, amnion</sup>

Mention the importance of Auxins in plants.

- Regulate growth
- Differentiation
- opening
- used in human