Name: ..... Adm no: .....

Stream: ..... Class No: .....

ASUMBI GIRLS HIGH SCHOOL

MOTTO: INTEGRITY

BIOLOGY FORM FOUR REVISION

TIME: 2HOURS

REPRODUCTION

ASUMBI GIRLS HIGH SCHOOL

THE SHARPENER SERIES 2020

BIOLOGY

INSTRUCTIONS TO CANDIDATES

1. Answer **all** the questions in the spaces provided.
2. Additional pages **must not** be inserted.
3. Candidates may be penalized for false information and even wrong spellings of technical terms.
4. Your work must be presented neat

FOR OFFICIAL USE ONLY

QUESTIONS	MAXIMUM MARKS	CANDIDATE'S MARKS
1-80		

This paper consists of 22 printed pages,

Students should check to ascertain that all pages are printed and that

No questions are missing

''THE DESTROYERS PARADISE''

THE SHARPENER

REPRODUCTION

1. **(a)** What is reproduction? (1mk)

……

……

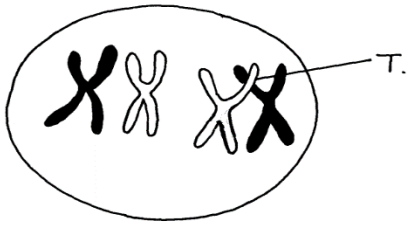
(b) Give two reasons why reproduction is important (2mks)

……

……

CELL DIVISION

2. The diagram below shows a phenomenon which occurs during cell division.



(a) Name the part labeled T. …….. (1mk)

(b) (i) State the biological importance of the part labelled T. (2mks)

……

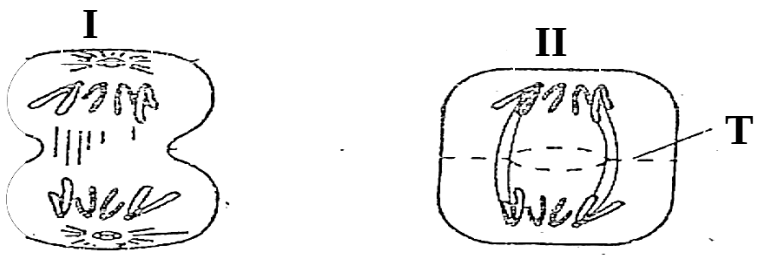
……

(ii) Identify the type of cell division in which this phenomenon occurs. (1mk)

……

……

3. The figure below represents cytoplasmic division in animal cell and plant cell.



a) Identify the phase of cell division…….. (1mark)

b) Give two reasons that qualify I to be an animal cell (2mks)

……

……

c) Name the structure labeled **T**……. (1mark)

d) Name the part of the plant from which the cell labeled **II** was obtained (1mark)

……

4. (a) At what stage of meiosis is the chiasmata formed?

……

(b) (i) What is the significance of the above part in living organisms?

……

……

(ii) State two importance of meiosis in living organisms?

……

……

5. List four differences between Mitosis and Meiosis (4mks)

……

……

……

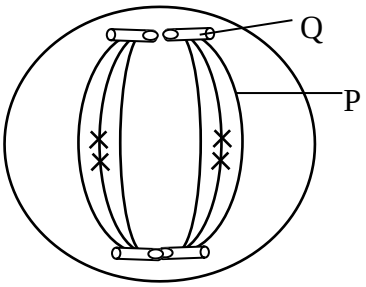
……

6. (a) State the role of centrioles during cell division (2mks)

……

……

7. The diagram below represents a stage in cell division.



(a) Name the stage of all division shown in the diagram above.

……

(b) Give reasons for your answer.

……

……..

8. State the stage in meiosis where the following take place

(a) Disappearing of nucleolus (1mk)

……..

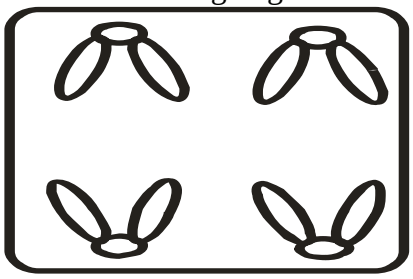
(b) Formation of new spindle fibres (1mk)

……..

(c) Formation of separate cells each with haploid number of chromosomes (1mk)

……..

9. Below is an animal cell undergoing cell division.



a) Name the type of cell division. (1 Mark)

……..

b) Where was the cell derived from? (1Mark)

……..

c) Identify the stage of cell division shown by this cell. (1Mark)

……..

10. State the stage in cell division in which the following events occurs: -

(i) Replication of the genetic material. ……. (1mk)

(ii) Exchange of genetic material …… (1mk)

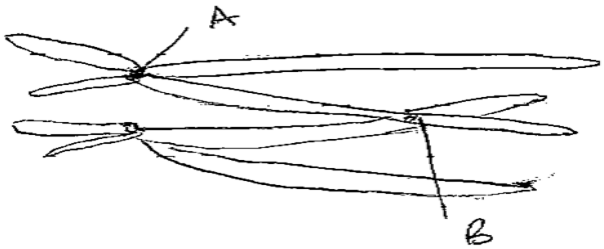
11. (a) At what stage of meiosis does crossing over take place. ……. (1mk)

(b) What is the difference in prophase of mitosis and meiosis? (1mk)

…….

…….

12. A phenomena which occurs during cell division is shown in the diagram.

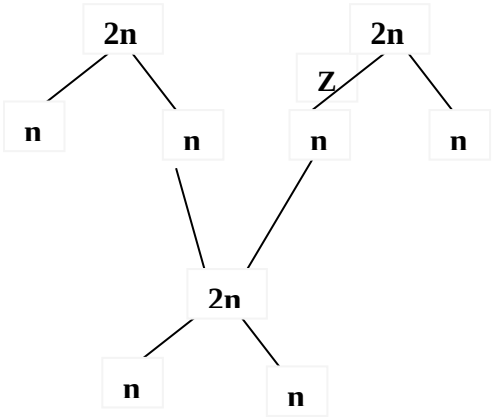


a) Name the parts labeled A and B (2Marks)

A…… B……

b) Which stage of cell division does the process occur? …… (1Mark)

13. The chart below shows the number of chromosomes before and after cell division and fertilizations in a mammal.



a) What type of cell division take place at Z? (1Mark)

……..

b) Where in the body of a female does process Z occur? (1Mark)

……..

c) i) Name the process that leads to addition or less of one or more chromosome. (1Mark)

……..

ii) Name two conditions in man due to the process named in (i) above. (2Marks)

……

……

14. (a) Mitosis is described as being equational, whereas meiosis I is reductional. Explain (2mks)

……

……

(b) (i) Name the type of cell division that produces gametes (1mk)

……

(ii) Where does the type of cell division mentioned above occur in mammals? (1mk)

……

15. (a) Highlight the importance of mitosis (3mks)

……

……

……

(b) State any four activities that occur during prophase stage of mitosis (4mks)

……..

……

……

ASEXUAL REPRODUCTION

16. (a) What is asexual reproduction? (1mk)

……

……

(b) State any five types of asexual reproduction (5mks)

……

……

……

(c) State the advantages and disadvantages of asexual reproduction

i. Advantages (3mks)

……

……

ii. Disadvantages (3mks)

……

……

17. (a) What is sexual reproduction?

……

……

(b) State the advantages and disadvantages of sexual reproduction

i. advantages (2mks)

……

……

ii. disadvantages (2mks)

……

……

18. A student carried out a study to observe the methods of reproduction and feeding in Amoeba species. He observed that Amoeba doubled its number after every 20 minutes.

a) Name the type of reproduction shown by the amoeba species. (1mk)

……

……

b) Draw the process of reproduction in Amoeba named in (a) above. (1mk)

……

……

c) Describe the principle used in reproduction in Amoeba species. (2mks)

……

……

d) State the function of Pseudopodia in Amoeba (2mks)

……

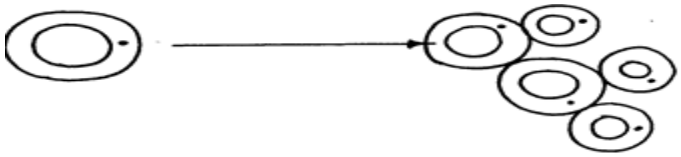
……

e) Name the type of cells in human body which shows a similar biological process as one shown by amoeba above. (2mks)

……

……

19. The diagram below illustrates a process in a given species of organism



a) Name the organism that undergoes the process above (1mk)

……

……

(b) Briefly describe how the process occurs (2mks)

……

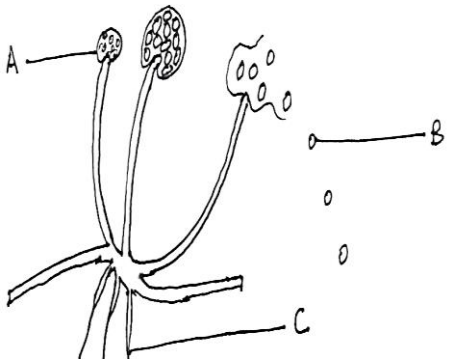
……

20. Describe new organisms arise by asexual means (15mks)

……

……

21. The drawing below represents a mature bread mould (Rhizopus). Study it and answer the questions which follow



a) Name the structures labeled A, B, and C. (3mks)

A…… **B** ……

C……

b) Identify the type of asexual reproduction represented in the diagram. (1mk)

……

c) Give **one** function of structure C. (1mk)

……

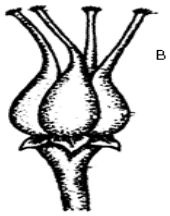
THE FLOWER

22. What is meant by the terms: - (2mks)

a) i) Epigynous flower …….

ii) Staminate flower …….

23. The diagrams below represent two gynoecia A and B obtained from two different plants.



(a) What name is given to; Gynoecium A? ……

Gynoecium B? ……

(b) State the observable difference between the gynoecia A and B

……

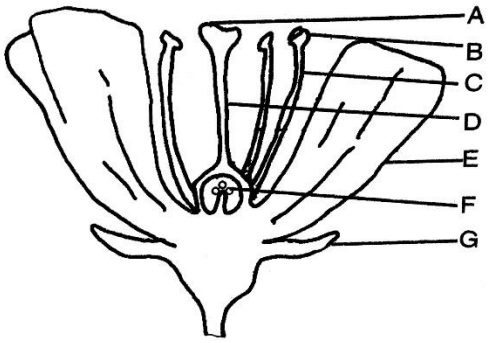
……

(c) State the role played by Heterostyly in plants.

……

……

24. Use the diagram below to answer the questions that follow



a) Name the parts labelled above

b) Which of the labelled parts constitute the gynoecium of the flower?

……

……

c) Describe the ovary of the flower

……

d) The flower has both stamen and carpels. What term is used to describe such a flower

……

25. The diagram below shows the structure of a flower.

(a) To what family does the flower belong? (1mk)

……

(b) Suggest the agent of pollination (1mk)

…..……

(c) State the characteristics that makes it suitable to the agent of pollination (3mks)

……

……

……

POLLINATION AND FERTILIZATION

26. a) Name the part of an ovule that develops into each of the following parts of a seed after Fertilization

i) Testa …… ii) Endosperm …….

b) What is parthenocarpy?

……

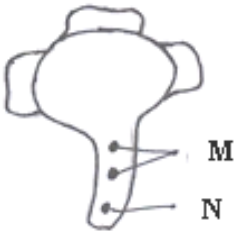
……

c) Why is cross pollination more advantageous to a plant species than self-pollination?

……

……

27. The diagram below shows a pollen tube as it develops down the style.



a) Name the parts labeled M and N. (2mrks)

M……

N……

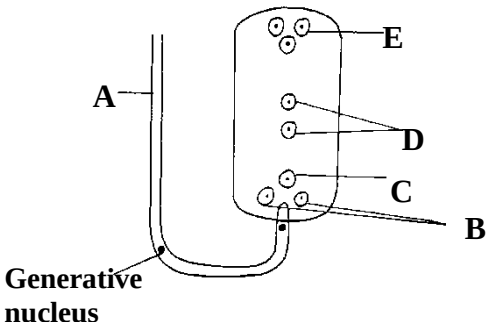
b) State the functions of the part labeled M. (2mrks)

……

……

c) On the diagram label the exine and intine (2mks)

28. The figure below shows the embryo-sac before fertilization.



(a) Identify the structures labelled **A** and **B .** (2mrks)

A ……

B ……

(b) Identify the structures labelled in the diagram that will develop into the following after fertilization.

i) Embryo…… (1mrk)

ii) Endosperm…… (1mrk)

(c) State the ploidy of each the following nuclei after fertilization.

i) **C** …… (1mrk)

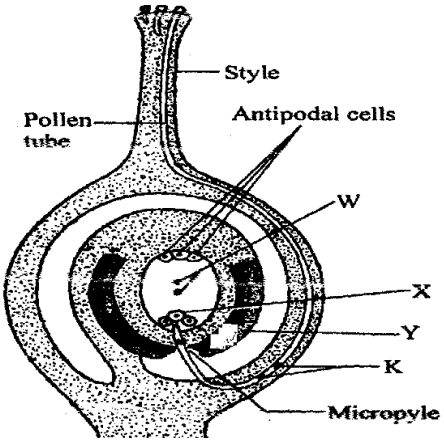
ii) **D** …… (1mrk)

(d) Briefly outline the process of "double" fertilization in flowering plants. (2mrks)

……

……

29. The diagram below shows a cross section through the female part of a flower.



a) Name the structures labelled W,X, and Y. (3mks)

X .....

Y .....

Z .....

b) State two functions of the pollen tube. (2mks)

.....

.....

c) What happens to antipodal cells after fertilization. (1mk)

.....

.....

d) Name the structure labelled K and state their role. (2mks)

.....

.....

30. Name two mechanisms that hinder self-fertilization in flowering plants

……

……

31. (a) What do you understand by the term double fertilization?

……

……

32. State three ways in which flowers prevent self-pollination

……

……

33. (a) Name the parts of the flower in which pollen grains are formed.

……

(b) Name two nuclei found in pollen grains.

……

……

34. (a) Name the parts of a flower responsible for gamete formation

……

……

(b) State one feature of pollen grains from a wind pollinated flower

……

……

35. Distinguish between the following terms: Pollination and fertilization

……

……

36. (a) Give the differences between the following structures in wind and insect pollinated flowers. (6mks)

Structure	Insect pollinated flower	Wind pollinated flower
(i)Anther (ii)Stigma (iii)Pollen grain		

(b) State two mechanisms that hinder self-pollination in flowering plants

……

……

37. State the function of nectarines in an insect pollinated flower. (2mks)

……

……

……

38. (a) State two ways in which the male parts of a wind pollinated flower are adapted to their mode of pollination

……

……

(b) Differentiate between monoecious and dioecious plants

……

……

39. Name two structures in plants where male and female gametes are produced

……

……

40. Name the mechanisms that hinder self-fertilization in flowering plants

……

……

41. A certain species of flowering plant relies entirely on sexual reproduction for propagation. The chromosome number of the cell in the ovarian wall is 16.

a) the pollen tube nucleus. …… (1mk)

b) A cell of the endosperm. …… (1mk)

c) Egg cell nucleus …….. (1mk)

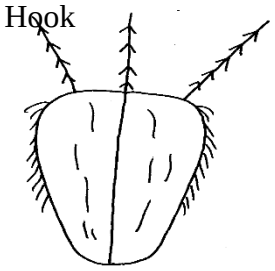
FRUITS AND FRUIT DISPERSAL

42. Name the type of placentation where;

(i) Placenta appears as one ridge on the ovary wall ……

(ii) Placenta appears at the centre of the ovary with ovules on it and the dividing walls of carpels disappear ……..

43. The diagram below represents a mature fruit from a dicotyledonous plant, observe it and answer questions that follow



a) To what group of fruits does the specimen belong? (1mk)

……

b) Suggest with reason the possible agent of dispersal of the fruit (1mk)

……

……

44. a) Describe the various mechanisms of fruit and seed dispersal. (15mks)

b) Describe the varying events that follow a flower after fertilization. (5mks)

45. (a) What is fruit dispersal? (1mk)

……

……

(b) Give two advantages of fruit and seed dispersal (2mks)

……

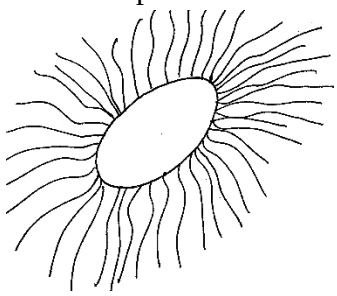
……

(c) Identify a possible disadvantage of seed dispersal (1mk)

……

……..

46. The diagram below shows a seed of a certain plant.



(a) Name the likely agent of dispersal. (1mk)

……..

(b) Give a reason for your answer. (1mk)

……..

SEXUAL REPRODUCTION IN ANIMALS

47. (a) Distinguish between external and internal fertilization (2mks)

……

……

(b) Give two classes of the phylum Chordata where members have external fertilization (2mks)

……

……

(c) Give a reason why frogs have to lay many eggs (1mk)

……

……

(d) Explain how the eggs are protected against predators (1mk)

……

……

48. State two advantages and disadvantages of external fertilization in animals

……

……

……

……

49. a) Explain why reptiles are better adapted to terrestrial life than amphibians (2mks)

……

……

b) The eggs of birds are relatively much larger than those of mammals. Explain (2mks)

……

……

50. (a) State the advantages and disadvantages of internal fertilization

advantages

……

……

disadvantages

……

……

(b) Give the importance of internal fertilization in human. (1mk)

……

……

REPRODUCTION IN MAN

Male reproductive system

51. State the functions of the following parts in the male reproductive system (2mks)

(a) Seminiferous tubules

……

……

(b) Sertoli cell

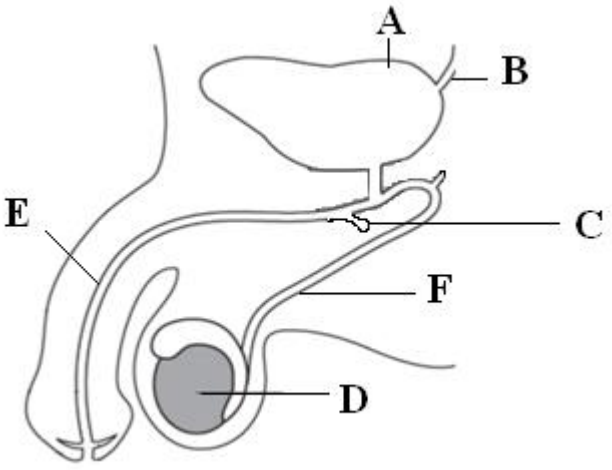
……

……

52. Name three male accessory glands and the fluids they produce

Accessory gland	**Fluid secreted**	**Role**

53. The diagram below shows the male reproductive system.



a) Give the letter of the structure on the diagram that matches each of the following descriptions.

i) Where sperms are formed (1mark)

ii) The ureter (1 mark)

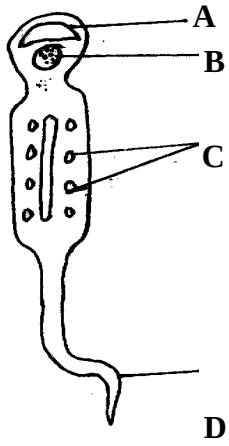
i) Tube that would be cut if the man was to be sterilized. (1mark)

iv) Where urine is temporarily stored (1mark)

b) Complete the sentence below. (2 marks)

Sperms are deposited close to the cervix, and swim from there to the .....where fertilization takes place. The new cell formed after fertilization is called..... (2 marks)

The diagram below shows a specialized cell from a human being.



(a) Identify the cell. (1mk)

……....

(b) Name the parts labelled **A,B,** and **C.** (3mks)

A:…….

B: …….

C: …….

(c) State the functions of the part labeled **D.** (1mk)

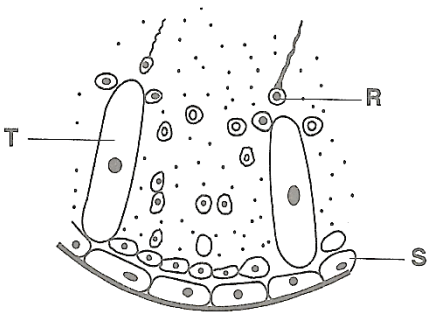
……..

(d) A student observed cells under a microscope and counted six **(6)** cells a cross the diameter of view . The diameter of field of view was found to be 1.25mm. Calculate the length of one of of the cells observed. (Answer in micrometer). (3mks)

……

……

54. The diagram below shows part of a seminiferous tubule.



(a) Name the parts labelled **R**, **S** and **T**. (3 marks)

R

S

T

(b) Name the tube into which the seminiferous tubules open. (1 mark)

Female reproductive system

55. a) State the difference between the sperm cell and the ovum. (3mks)

……

……

b) What is the significance of the egg being larger than the sperm in human reproduction? (2mks)

……

……

56. a) State the roles of oviduct in female reproductive system (2mks)

……

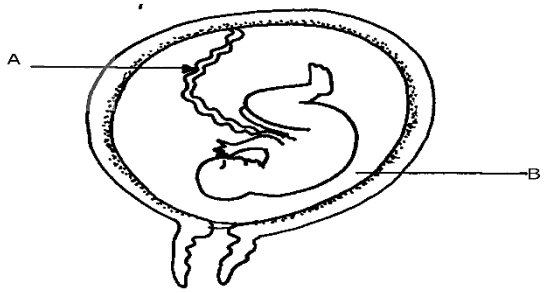
……

b) Explain how the oviduct is adapted for its function (2mks)

……

……

57. The diagram below represents a stage in the development of human foetus



(a) State one function of each of the structures labelled A and B

A ……..

B …….

(b) Apart from the size of the foetus what else from the diagram illustrates that birth was going to occur in the near future (2mks)

……

……

(c) Identify the process shown to be taking place (1mk)

……

……

(d) Explain why a pregnant woman is supplied with doses of iron tablets regularly (1mk)

……

……

(e) Explain why a pregnant woman is likely to

i) Excrete little urea (2mks)

……

……

ii) Urinate more frequently towards the last stages of pregnancy (2mks)

……

……

58. State three roles of placenta during pregnancy. (3mks)

……

……

……

……

59. How do identical twins and fraternal twins arise?

(i) Identical twins (2mks)

……..

……..

(ii) Fraternal twins (2mks)

……..

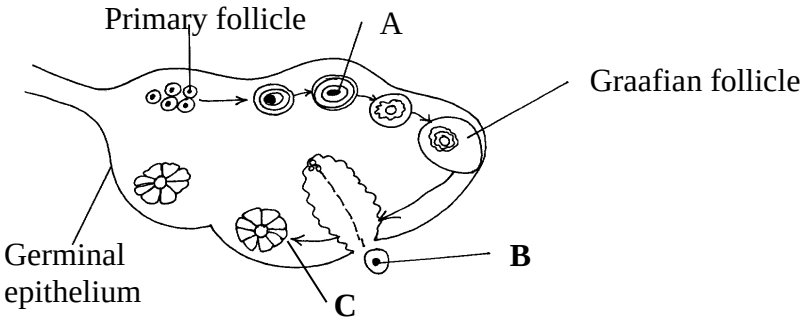
……..

60. State **two** functions of ovaries in humans. (2mrks)

……

……

61. The diagram below shows a section through the human ovary. Study it and answer the questions that follow.



(a) Name part labelled **A** (1mk)

……

(b) (i) Which part of the ovary divides to form the primary follicle? (1mk)

……

(ii) Which type of cell division is responsible for the production of primary follicles? (1mk)

……..…

(c) Follicle stimulating hormone reaches the ovary so that part **A** begins to mature.

(i) Name the first hormone, which is secreted by the ovary as a result of arrival of FSH. (1mk)

……

(ii) What is the role of this hormone in the menstrual cycle? (1mk)

……

(d) Structure **B** leaves the ovary.

(i) Where does structure **B** enter immediately after leaving the ovary? (1mk)

……..

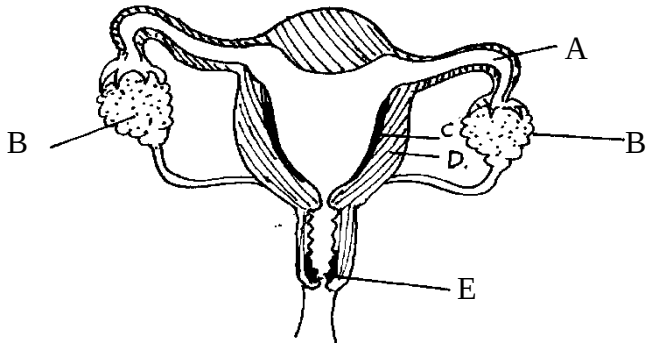
(ii) Which hormone level peaks just before structure **B** leaves the ovary? (1mk)

……

(a) State the role of structure **C**. (1mk)

……

62. Study the diagram below and answer the questions that follow.



(a) Name the part labelled **E**. (1mk)

……

(b) What are the functions of the part labelled **A**. (2mks)

……..

……..

(c) Which part of the structure responds to:

(i) Progesterone …….. (1mk)

(ii) Oxytocin …….. (1mk)

(d) Which type of cell division occurs in structure **B** and not structure labeled **E**. (1mk)

……

(e) State the conditions that results if implantation occurs at point labelled **A**. (1mark)

……

(f) Name the hormone secreted by the part labelled **B** and for each give **<u>one</u>** function. (4marks)

……

……

……

(g) How is part **D** adapted to its functions? (1mk)

.....

.....

(h) Of what significance is part **E** to reproduction? (1mk)

.....

.....

(i) What is the role of cervix during pregnancy? (1mark)

……

……

(j) State **two** functions of testosterone (2mks)

……

……

c) What is **in vitro** fertilization? (2mks)

……

……

63. (a) What is meant by the term fertilization**?** (2mks)

……

……

(b) What happens to the wall of the uterus; (1mk)

(i) before the release of an egg? (1mk)

……

(ii) if no fertilization occurs? (1mk)

……

(c) Explain why fertilization cannot occur in the uterus (1mk)

……

……

64. (a) What is implantation? (1mk)

……

(b) During implantation, the blastocyst differentiates into three layers. Namely:

a. …….. ii. ……. iii. ……..

(c) Which of the parts later develop into placenta? ……

65. (a) Explain how countercurrent flow occurs in the placenta and state its significance (3mks)

……

……

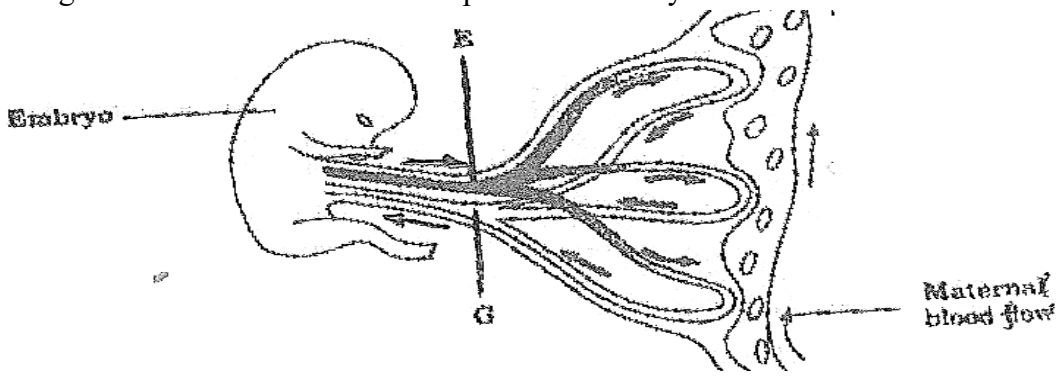
……

(b) How is the foetus protected from the high blood pressure from the mother? (1mk)

……

……

66. The diagram below shows a relationship between embryo's bloodstream and mother's blood stream.



a) Give the names of the parts labeled **E** and **G** (2mks)

E: …… **G:** …….

b) Name one substance that is at high concentration in **E**. (1mk)

……

c) i) In which organ does this kind of exchange shown above occur? (1mk)

……

ii) How is the structure you have named in c) i) above adapted to its function. (2mks)

……

……

…..……

d) i) Which substance surrounds the embryo during its development. (1mk)

……

ii) State **one** role of the substance you have named in d(i) above. (1mk)

……

……

67. Define the following terms (4mks)

i. Abortion

……

……

ii. Premature birth

……

……

iii. Miscarriage

……

……

iv. Parental care

……

……

68. (a) State three main components of colostrum (3mks)

……

……

(b) Name and give the roles of hormones involved in milk let-down (2mks)

……

……

(c) Explain how the cry or smell of the baby may stimulate the mother to produce milk (3mks)

……

……

……

ROLES OF HORMONES AND THE MENSTRUAL CYCLE

69. (a) What is puberty? (1mk)

……

……

(b) Give a secondary sexual characteristic common to both males and females (1mk)

……

……

70. (a) State the roles of the following hormones in human males (2mks)

i. Follicle stimulating hormone

……

……

ii. Luteinizing hormone

……

……

(b) What are androgens? (1mk)

……

……

71. State the functions of the following hormones in the menstrual cycle: (10mks)

(i) oestrogen

……

……

(ii) luteinizing hormone (LH)

……

……

(iii) Follicle stimulating hormone (FSH)

……

……

(iv) Progesterone

……

……

72. Name the hormone that:

(a) Stimulate the contraction of uterus during birth.

……

(b) Stimulate the disintegration of corpus luteum when fertilization fails to take place.

……

73. (a) Explain why menstrual periods stop immediately after conception?

……

……

(b) Explain why hormone testosterone still exerts its influence even when vas deferens have been cut.

……

……

74. (a) What is menopause?

……

……

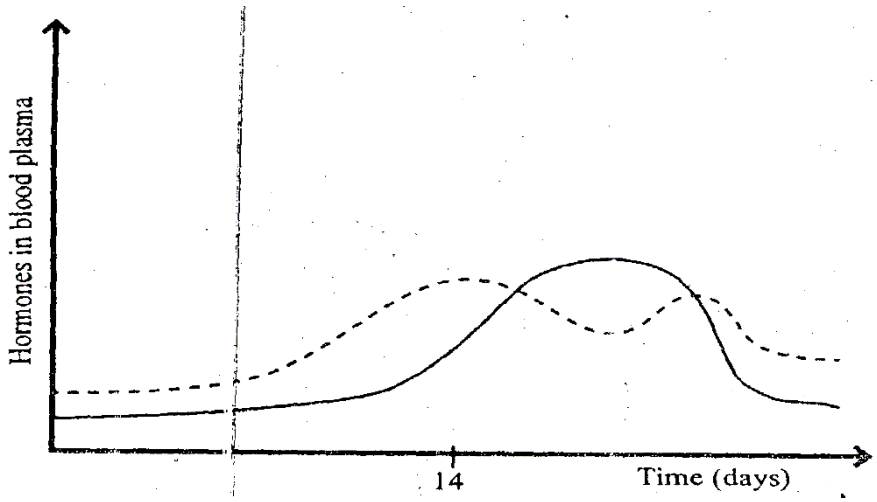
(b) State any three symptoms that a woman undergoing menopause may experience (3mks)

……..

……

……...

75. The graph below shows relative levels of oestrogen and progesterone during the human menstrual cycle.

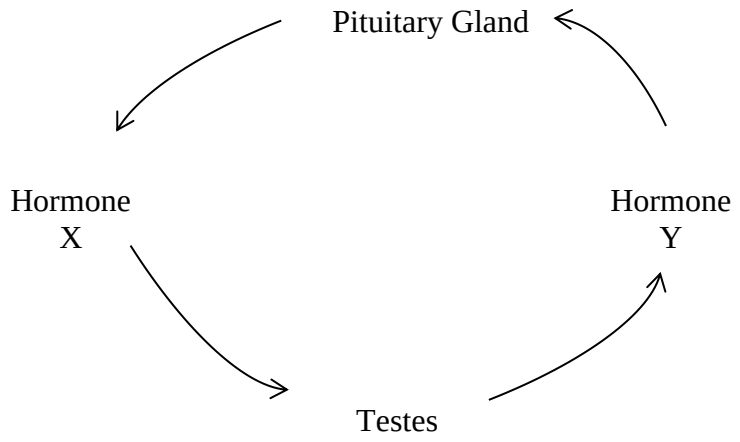


a) Mark on the graph the curves that represents (2mks)
i) Progesterone
ii) Oestrogen

b) Which is the most likely day of ovulation from the graph? Explain (1mk)
……
……

ii) Compare an ovum cell and a zygote. (2mks)
……
……

76. The diagram below represents a simple endocrine feed-back mechanism in a human male.



(a) Name the hormone labeled **X**. (1mk)
……
……

(b) Stated **two** differences that may be observed between a normal male and one who is incapable of producing hormone labeled **Y**. (2mks)
……
……

STI'S

77. Name the causative organism of the following diseases

Disease	**Causative agent**	**Control**
Gonorrhea		
Syphilis		
Trichomoniasis		
Candidiasis		
AIDS		

78. State two ways by which HIV/AIDS is transmitted from mother to child (2mks)

……

……

79. Name three main methods through which HIV/AIDS is transmitted (3mks)

……

……

……

80. Gonorrhea is a disease that is spread by sexual intercourse. Give two ways by which the spread of gonorrhea can be reduced.

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