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MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

FIRST YEAR EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN OCCUPATIONAL HEALTH&SAFETY

COURSE CODE: NCO 124

COURSE TITLE HUMAN EMBRYOLOGY

DATE: Wednesday 20/4/2022 **TIME:** 11.30 am-2.30 pm

INSTRUCTIONS TO CANDIDATES

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

SECTION A

1. The correct statement about gametes is:
   a)The Spermatozoa can survive up to 72 hours
   b)The oocyte can survive up to 48 hours
   c)The result of fertilization is restoration of the haploid number of chromosomes
   d)The unfertilized secondary cocyte normally degenerates within 4-8 hours

2. The correct statement about sperm capacitation is
   a) It takes about 24 hours
   b) The glycoprotein coat factor is removed from the plasma membrane over the acrosome
   c) Testosterone is a strong capacitating agent
   d) It occurs in the epididymis

3. The incorrect statement about zona reaction is
   a) It occurs after penetration of the corona radiata
   b) The enzyme from the cortical granules alter sperm receptor molecules in the zona pellucida
   c) It prevents polyspermy
   d)renders other sperms incapable of fertilizing

4.A human being has the following number of chromosomes ;
   a) 45
   b) 47
   c) 46
   d) 48

5.The following is a chromosomal structural defect:
   a) Cri-du –chat syndrome
   b) Down syndrome
   c) Klinefelter's syndrome
   d) Trisomy 13

6.Which of these is most important during implantation
   a) Cytotrophoblast
   b) Syncytritrophoblast
   c) Zona pelluciden
   d) Corona radiata

7. The primitive streak is associated with the development of
   a) Notochord
   b) Mesoderm
   c)Neuraltube
   d) Epiblast.

8. In mitosis anaphase is marked by;
   a) Chromosomes lining up on the equatorial plane
   b) Chromosomes uncoiling and lengthening
   c) Migration of chromatids to the opposite poles

d) Each chromosome replicates its DNA becoming doubled

9. In Turners syndrome
    a. Phenotype is male
    b. Neck is webbed
    c. There is normal mental development
    d. They have slanting eyes

10. The condition where we have less amount of amniotic is:
    a. oligohydramnios
    b. hydrocephalus
    c. Polyhydramnios
    d. hydramnios

11. The point in meiosis where sister chromatids separate from each other is
    a. metaphase 1
    b. anaphase 1
    c. anaphase 11
    d. telophase

12. Follicle stimulating hormone
    a. stimulates endometrial development
    b. stimulates development of ovarian follicles
    c. stimulates formation of corpus luteum

d) Stimulates spermatozoa to fertilize the ovum

13. The correct statement about oogenesis is;
    a. 1st meiosis is arrested during metaphase by oocyte maturation inhibitor (OMI)
    b. Resumption of meiosis and ovulation are by an ovulatatory stage in levels of oestrogen
    c. Second meiosis is arrested at metaphase and completed after ovulation
    d. The polar bodies serve to take the other half of the chromosomes

14. Implantation occurs in the stage of
    a. Cleavage
    b. Blastular
    c. Gastular
    d. Neurular

15. Which is the correct order of events during human development
    a. Gametogenesis, fertilization, cleavage, morulla
    b. Fertilization, gametogenesis, cleavage, morulla
    c. Gametogenesis, cleavage, fertilization, morulla
    d. Morulla, cleavage, fertilization,gametogenesis

16. The corpus luteum is prevented from disintegrating after fertilization by
    a. The gonadotropin releasing hormone
    b. The follicle stimulating hormone
    c. The human chorionic gonadotropin

d. The luteinizing hormone

17. The amniotic cavity develops within the;
    a. The epiblast
    b. The hypoblast
    c. The syncytiotrophoblat
    d. cytotrophoblast

18. Sirenomelia is characterized by:
    a. presence of an extra digit
    b. fusion of the lower limbs
    c. cardiac defects
    d. defects in the cranium

19. The following is the function of the amniotic fluid
    a. Production of enzymes
    b. Diffusion of nutrients and oxygen
    c. Stores glycogen
    d. Acts as a shock absorber.

20. Fertilization takes place at
    a. The ovary
    b. The fimbriae
    c. Ampula
    d. Isthmus

SECTION B

1. Draw a well labeled diagram of a mature spermatozoa (5Marks)
2. Explain the defect and signs of klinefelter's syndrome (6 Marks)
3. Explain the steps involved in fertilization (7marks)
4. Differentiate between oogenesis and spermatogenesis (6marks)
5. Describe 4 roles of the placenta (8 marks)
6. Discuss the twinning process and the various types of twins (8marks)

SECTION C

1. (a) Explain factors that determine the effect of a teratogen (principles of teratogenicity) (5marks)

(b) Explain 10 various forms of teratogens and their effects on the embryo (10marks)

(c) Explain any 5 types of birth defects (5marks)

2. Explain using a diagram the process of spermatogenesis (15)

b) Explain factors that affect the process of spermatogenesis (5marks)