HUMAN REPRODUCTION

Each question carry one score

1. The testes are situated outside the abdominal cavity within a pouch called **……**
2. ……..is the Pouch outside the abdominal cavity in which testis is placed.
3. …….. helps in maintaining the low temperature of the testes (2–2.5° C lower than the normal internal body temperature) necessary for spermatogenesis
4. Male germ cells, which lines the seminiferous tubule of testis is called……..
5. Name the two types of cells, which line inside the seminiferous tubule?
6. What is the significance of Extra abdominal testis in human?
7. Note the relationship between first two terms and filll the blank
   a)Progesteron : Corpus luteum
   HCG : .....
   b)Testis : Sperms
   …….. ……. : Eggs
   c)Testis : Male
   ……. : Female
   d) FSH : Sertoli cells: Spermiogenesis
   LH :Leydigcells :……
8. Funnel shaped part of oviduct is called
   a)Ampulla b)Isthmus
   c)Infundiulam d)Fimbriae
9. The external Opening of Urethra is called…….
10. Cervical canal along with vagina forms……canal
11. Which type of muscle is present in middle layer of uterus
    a)Skeletal muscle b)Smooth Muscle
    c)Cardiac Muscle d)No muscle
12. The middle layer of uterus is called……
13. How many sperms are produced from a 200 primary spermatocyte ?
14. Which of the following cells undergo meiotic division to produce sperms
    a)Sertoli cells b)Ley dig cells
    c)Oogonia d)Spermatogonia
15. The part of oviduct close to the ovary is called……..
    a)Ampulla b)Isthmus
    c)Infundiulam d)Fimbriae
16. Which hormone is essential for maintaining the endometrium ?
    a)Estrogen b)Progesterone
    c)Androge d)LH
17. Sudden fall in the level of progesterone/Degeneration of corpus luteum in a female results…….
18. Uterus is supported by……..attached to pelvic wall
    a)Tendon b)Bone c)Ligaments d)Ovary
19. Which of the following cells undergo meiotic division
    a)Zygote b)Secondary spermatocyte
    c)Primary spermatocyte
    d)Secondary Oocyte
20. The milk produced during the initial few days of lactation is called……..
21. How many eggs are produced from a single secondary oocyte ?
22. Choose the odd one from the following and write common features of others.
    a)Estrogen b)Androgen
    c)Relaxin d)Progesterone
23. Feeding.....in the first few days is essential for preventing infection in a newly born baby
24. Name the cells in testis which synthesize and secrete androgens?
25. The embryo with 8 to 16 blastomeres is called a……
    a)Sperm b)Oogonia
    c)Morula d)Blastocyst
26. Inverted pear is the shape of……
27. Which of the following is not an Ovarian Hormone ?
    a)Androgen b)Estrogen
    b)Progesterone d)Relaxin

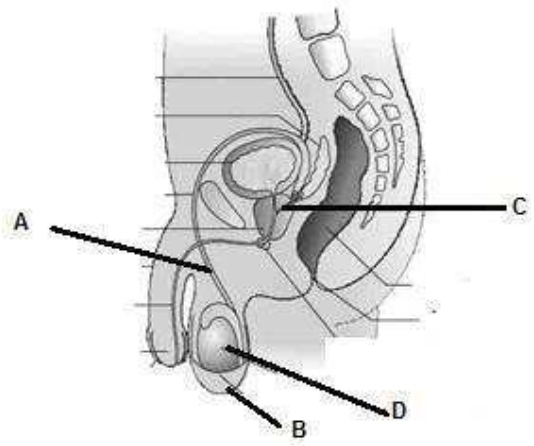
28. Where does fertilization in Human taking place ?
29. Name the loose pouch of skin which suspended testis outside the abdominal cavity?
30. Which hormones are called gonadotropins hormones?
    a)FSH and LH
    b)Estrogen and Progesterone
    c)Androgen and Estrogen
    d)GnRH and FSH
31. Human female possess 44+XX chromosome number. The chromosome number of secondary oocyte is
    a)44+XX b)22+X c)44+XX d)22+XX
32. Which of the following ducts store and transport the sperms from the testis to the outside through urethra.
    a)Vas deferens b)Rete testis
    c)Ejaculatory Duct d)Ureter

Each question carry two score

33. Why Testes is placed in scrotal sac?
34. Which cells provide nutrition to the male germ cells?
35. Match the following

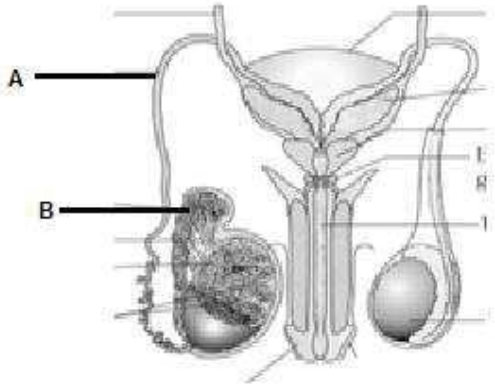
Column A	Column B
Perimetrium	Middle thick layer
Myometrium	Thin outer layer of uterus
Endometrium	Fimbriae
finger-like projections of oviduct	Inner glandular layer

36. Write the functions of the following organs/parts
    a)Testis
    b)Fimbriae of oviduct
    c)Cilated epithelium lining oviduct
    d)Myometrium of uterus
37. Name the layer of uters
    a)……layer undergoes cyclical changes during menstrual cycle
    b)……exhibits strong contraction during delivery of the baby
38. Figure shown below is the male reproductive system



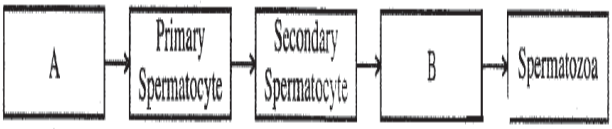
    a)Name the part A and C
    b)Mention the function of B and D

39. Diagrammatic view of male reproductive system is given below



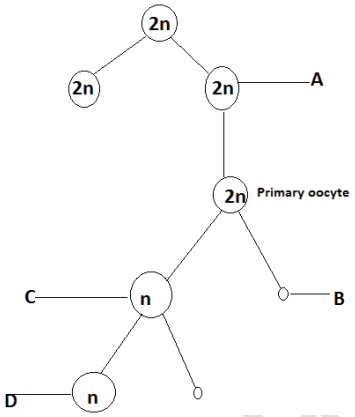
    a)Label A and B
    b)Chromosome number of sperm is…….
40. A student conceived the layers of uterus as follows If you find any mistake in the underlined part, correct them with appropriate words
    a)The **Middle thin** membranous perimetrium,
    ii)middle thick layer of smooth muscle, **Perimetrium**
    iii)inner glandular layer called **endometrium**
    iv)The **Perimetrium** undergoes cyclical changes during menstrual cycle
    v)the **Myometrium** exhibits strong contraction during delivery of the baby.

41. The presence or absence of hymen is not a reliable indicator of virginity or sexual experience, Evaluate this statement ?
42. Write any 4 difference between spermatogenesis and oogenesis ?
43. Complete the flow chart showing spermatogenesis by filling A and B and answer the question



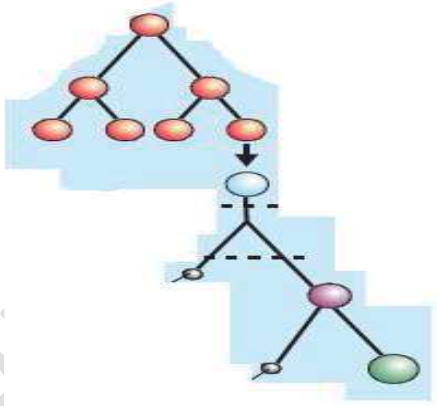
a)what is the chromosome number of primary spermatocyte?
b)what is the significance of reduction division in spermatognenesis

44. Observe the diagram provided and identify the process:

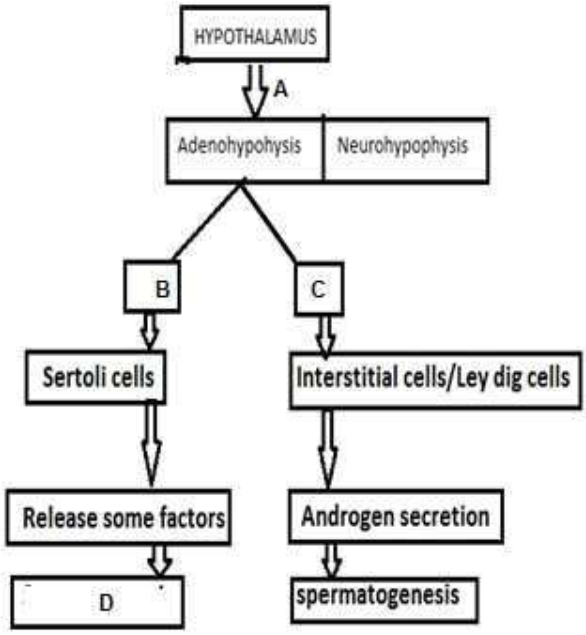


a)Label; A,B,C and D
b)Why the gametes produced are haploid even though the gamete mother cells are diploid?

45. Write the role of FSH and LH in spermatogenesis ?
46. The following statements compare the process of Oogenesis and spermatogenesis. Which one is not true
a)Production of ovum ceases at certain age, but sperm production continues even in old men
b)Oogenesis begins in the embryonic stages, but spermatogenesis starts at the oneset of puberty.
c)Meiotic arrest occurs both in Oogenesis and spermatogenesis.
d)Polar bodies are formed in Oogenesis
47. The diagram represents a process of gametogenesis. Closely observe it and answer the following
a)Is it spermatogenesis or Oogenesis?
b)What does smaller shaded circle represent?
c)Write down two significance of production of same?

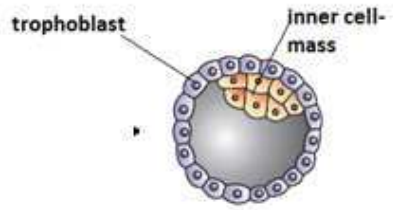


48. Write the difference between
a)Spermiation and Spermiogenesis
b)Spermatogenesis and Oogenesis
49. Hormonal regulation of spermatogenesis in male is represented in flow chart as below.

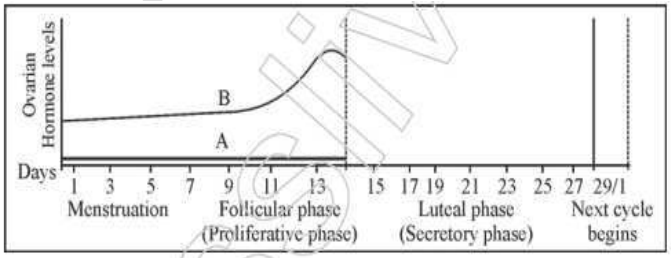


a)Name the Hormones A,B and C
b)Name the process D

50. Name the Hormone and its source
    a) Spermatogenesis starts at the age of puberty due to significant increase in the secretion of ……..
    b) Hormones that stimulate leydig cells to secrete androgen.
51. The structure of blastocyst is given below

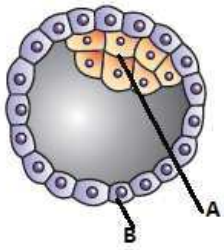


    a)Which part of blastocyst helps in implantation in to the endometrium ?
    b)Which part of blastocyst become embryo ?
52. Placenta is considered as the structural and functional unit between developing embryo (foetus) and maternal body.
    a)Write any 2 functions of placenta ?
    b)Why placenta is called as endocrine tissue ?
53. Which of the following statement is wrong about Oogenesis?
    a) The process of formation of a mature male gamete is called Oogenesis
    b) Oogenesis is initiated Only after Puberty
    c) Mature ovarian follicle is called Graffian follicle
    d) a tertiary follicle is characterised by a fluid filled cavity called antrum.
54. The graph given below shows the level of the ovarian hormones in a normally menstruating woman during the follicular phase.

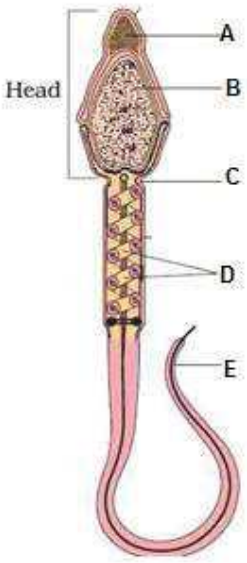


    (a) Name 'A' and 'B'.
    (b) Reconstruct the graph showing the level of hormones in luteal phase.
    (c) Name the hormone secreted by Corpus Luteum and mention its function.

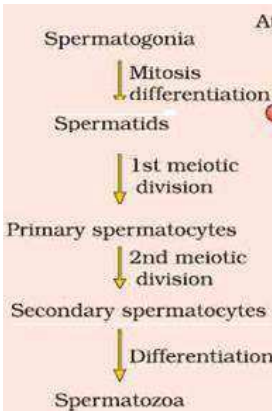
55. Given below is the diagrammatic representation of Human blastocyst. Observe the diagram and answer the following questions.



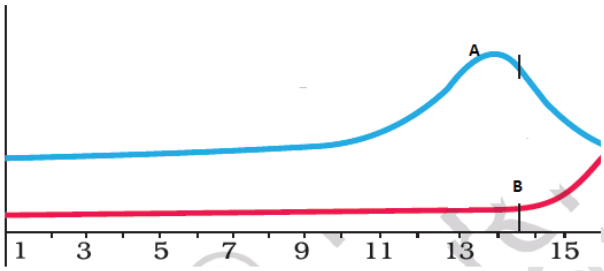
    a)Identify A and B
    b)Write the function of A and B
56. Which ovarian and Pituitary Hormones are involved in Menstrual cycle ?
57. a)Diagram of mammalian sperm is given below. Label the parts marked
    b)The seminal plasma along with the sperms constitute the ……



58. Find the mistake and re arrange it in correct order



59. What is LH surge ?
60. The graph shows the level of ovarian hormones in a normally menstruating women during follicular phase



(3)

a)Name A and B
b)Mention the role of pituitary hormones in maintaining this condition
c)Reconstruct the graph for luteal phase?

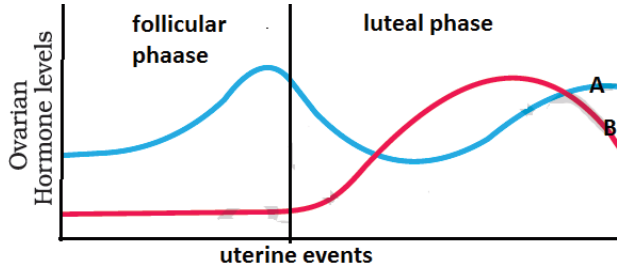
61. LH and FSH are gonadotrophins. Distinguish their roles in male and female?
62. match the columns A and B

A	B
Corpus Luteum	Embryo
Leydig cells	Implantation
Blastocyst	Progesterone
Inner cell mass	Androgens
	Prolactin

63. Arrange the following hormones under 2 heading

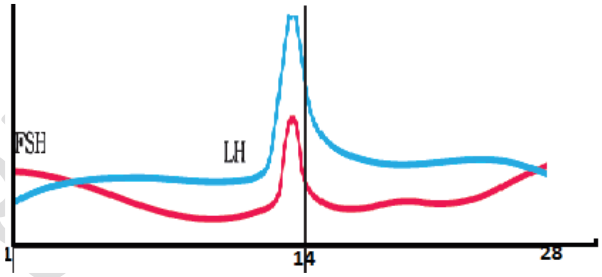
FSH,LH,Estrogen,Progesterone

64. Observe the Graph provided



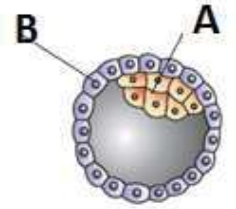
a)What do A and B stands for?

65. In which part of human reproductive system the following events occur?
a)Fertilisation b)Implantation
66. The graph shown below shows the levels of LH and FSH at various stages of menstrual cycle.

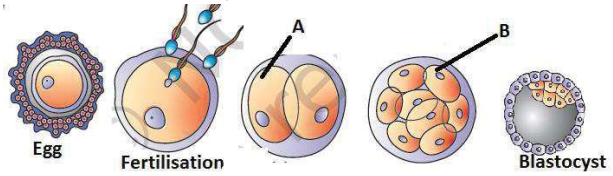


a)Name the source of LH and FSH
b)The level of LH is maximum during the middle day of cycle. Mention its effect?
c)Note the function of LH in male?

67. Expand the following
Hcg hPL
68. 'LH Surge' induces the rupture of Graffian follicle
(a) Which gland produces LH and in which day LH Surge happens?
(b) Write the role of LH in males.
69. Mothers milk is considered as very essential for a new born baby.
a) Name the first milk released from the mother just after birth.
b) What is its importance?
70. Diagram of a Human blastocyst is given below .Identify A and B



71. Some stages of embryonic development are given below. Observe these diagram and answer the question



Name the two types of cells found in the Blastocyst?

72. Breast feeding during initial period of infant growth is necessary to develop immunity of new born babies. Why ?

73. Match the following

Column A	Column B
Sperm	Embryo with 8-16 cells
Egg	Germ layers
Inner cell mass	Spermatogonia
Morula	Oogonia

74. Which of the following hormones are produced in a women only during pregnancy ?

Estrogen,hCG,Relaxin,Androgen, Progesterone, Androgen,hPL

75. Spermatogenesis works only when the body temperature is 2 to 2.5^0 C less than normal body temperature.How it works in human body,since human internal body temperature is 37^0C.

76. Raju has lost his mother at birth. He is unhealthy and contract diseases easily. In his Doctor's opinion, Raju's ill health is due to his not drinking mother's milk.
How will you justify the doctor's opinion in the light of your knowledge of immunity?

77. Which of the following statement is wrong about hymen?
a)In some women the hymen persists even after coitus.
b)The opening of the vagina is often covered partially by a membrane called hymen
c) Hymen never be broken by a sudden fall or jolt, insertion of a vaginal tampon, active participation in some sports like horseback riding, cycling
d) The presence or absence of hymen is a reliable indicator of virginity or sexual experience

78. When the urine sample of a lady is tested, presence of Human chorionic gonadotropin (HCG) was detected
a)What does the presence of HCG indicate?
b)Which is the source of HCG?

79. Match the following

Column A	Column B
Androgen	Placenta
Progesteron	Growing ovarian follicle
Estrogen	Corpus luteum
hCG	Leydig cells

80. Progesterone is called pregnancy hormone
a)Name the source of that Hormone ?
b)What is the role of progesterone in menstrual cycle ?

81. Match the following

Column A	Column B
Rete testis	Female reproductive tract
Fallopian tubule	Testis
Acrosome	Sperm
Antrum	Tertiary follicle

82. What you meant by
a)Spermiation
b)Ovulation
c)Spermiogenesis
d)LH Surge

83. The human male ejaculates about 200 to 300 million sperms during a coitus of which, For normal fertility at least ……..% of sperm must have at least

normal size and shape and ……% of them must show vigorous motility.
and what is its function ?

84. Match the following

Column A	Column B
Hypothalamus	Gonadotropin hormone
Ovary	Progesterone
Corpus luteum	Estrogen
Pituitary Gland	GnRH

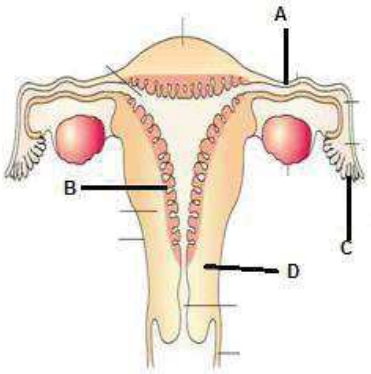
85. How secondary oocyte become larger in size and polar body became smaller after first meiotic divison of primary ooyte ?What is its advantage.

Each question carries three score

86. Arrange the following ducts in male reproductive system based on the path of sperm from inside to outside.
Rete testis, Vas deferens, Vasa efferentia, Seminiferous tubule, Ejaculatory duct, Urethral Meatus, Urethra

87. Name the part of oviduct
a)Wider part of oviduct ?
b)Part of oviduct close to the ovary ?
c)The last part of oviduct with narrow lumen ?

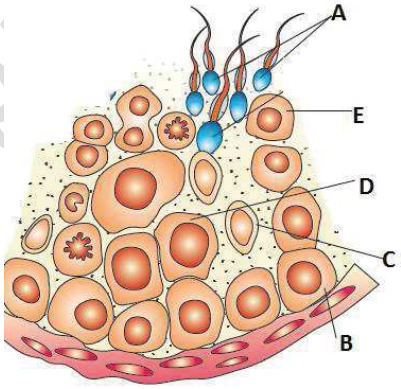
88. Diagrammatic sectional view of female reproductive system is given below



a) Label A ,B,C and D
b) Which part of the oviduct helps in collection of ovum after fertilization ?
c)The opening of the vagina is often covered partially by a membrane called ……..

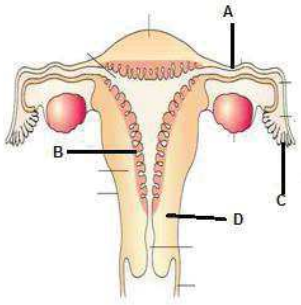
89. Answer the following questions
a)Which part of sperm contain Mitochondria ?
b)What is the function of mitochondria in a sperm ?
c)Acrosome of the sperm plays an important role in reproductive event. Explain

90. Observe the diagram and answer the question
a) Identify A and B
b) What is the function of C
c) In which of the marked part reduction division takes place? What is the significance of it?



91. Name the following
a)8-16 celled stage of embryo is called …
b)The structural and functional unit between developing embryo (foetus) and maternal body called……
c)The placenta is connected to the embryo through……

92. Diagrammatic sectional view of female reproductive system is given below

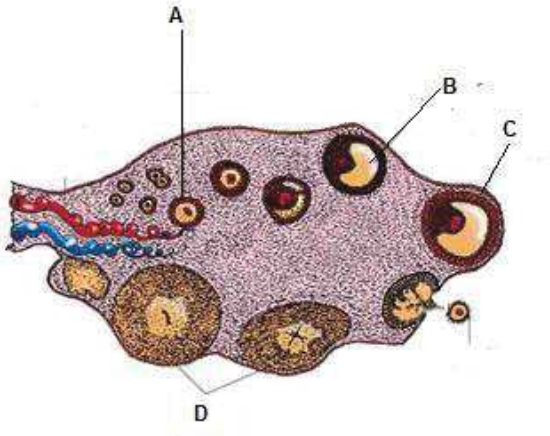


a) Label A ,B,C and D

b) Which part of the oviduct helps in collection of ovum after fertilization ?

c)The opening of the vagina is often covered partially by a membrane called ……..

93. Diagrammatic sectional view of Ovary is given below



a)Label A,B,C and D

b)Which hormone is secreted by D

94. Categorize the following cells based on the chromosome number (Haploid/Diploid)

Spermatid, Spermatogonia, Egg, Secondary oocyte, Polar body, Primary spermatocyte

Diploid cells	Haploid cells

95. Based on the features written below, Write name the uterine layers.

a)Muscular layer of uterus

b)Glandular layer of uterus

c)Thin membranous layer of uterus

96. Name the hormones

a)Growing ovarian follicle secrete…….hormone

b)Corpus luteum secrete…….hormone

c)The functions of male accessory ducts and glands are maintained by…….hormones.

REPRODUCTIVE HEALTH

Each question carry one score

1. ..... and .....are two surgical contraceptive methods in male and female respectively
2. …….is the one of most widely accepted methods of contraception in India.
   a)Condom b)IUDs c)Pills d)Surgical Method
3. ……a terminal method to prevent any more pregnancies.
   a)Vault b)Implant c)IUDs
   d)Surgical Method
4. Which of the following method is Ideal contraceptives for the females who want to delay pregnancy and/or space children
   a)Condom b)IUDs c)Pills d)Surgical Method
5. Note the relationship between first two terms and suggest a suitable terms for the fourth
   a)GIFT : Gamete
   ZIFT : .....
   b)Female : Tubectomy,
   male :……
   c)Vasectomy : Vas deferens is cut//tied
   Tubectomy :……..
6. Select the odd one and justify your selection?
   Malaria, Gonorrhoea ,Amoebiasis, filariasis
7. ..... is a popular brand of condom for the male.
8. Which of the following pairs of STIs is completely curable ?
   a)HIV, Hepatitis B
   b)Hepatitis B, Gonorrhoea
   c)Symphils, Gonorrhoea
   d)Chlamydomonas, Genital Herpes
9. One among the contraceptive method is peculiar. Find the odd one and what is the common among others?
   a)Periodic abstinence
   b)coitus interruptus
   c)Lactational amenorrhea
   d)IUDs
10. Select the ART that uses an early embryo with upto 8 blastomeres
    a)ZIFT)IUT c)GIFT d)IUI
11. Find the odd one, and write the reason for selection
    a)Lactational amenorrhea ,coitus interruptus , Periodic abstinence Tubectomy
    b) Diaphragms, cervical caps and vaults, Condom.
12. Nalini is four month pregnant at the insistence of her mother in law, she underwent an illegal diagnostic procedure by which the sex of the baby was determined to be female. Nalini's mother in law cursed her for conceiving a girl child.
    a)What is the diagnostic procedure used here?
13. Find out the odd one from the following, write the reason
    a)Cu T, b)Cu 7
    c)LNG-20 d) Multiload-375
14. …….is the pre-natal diagnostic technique of foetal sex determination and determination of genetic disorder of the foetus based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo
15. Which fluid is collected from the maternal body during pregnancy for amniocentesis ?
16. Identify the contraceptive methods based on the following statement
    a) avoiding chances of ovum and sperms meeting
    b) ovum and sperms are prevented from physically meeting with the help of barriers.
    c) Name the devices are inserted by doctors or expert nurses in the uterus through vagina to prevent pregnancy
17. Which of the following is a cause of Population explosion ?
    a)Increased MMR
    b)Decreased MMR
    c)Decreased IMR

d)Both B and C

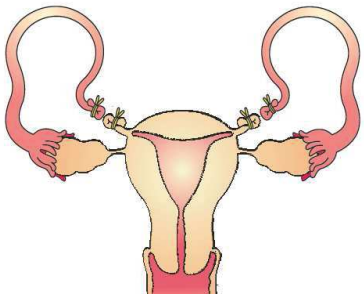
18. Amniocentesis is done
    a)during Pregnancy
    b)After Parturuion
    c)After menstruation
    d)None of these
19. Name the technique of transferring embryos up to 8 blastomeres into the fallopian tube.
    a)GIFT b)ZIFT c)ICSI d) IUI
20. Different contraceptive methods are given below. Pick out the odd one
    a)Cu T b)Saheli
    c)Multiload 375 d)Lippes loop

Each question carry two score

21. Amniocentesis for sex determination is legally banned now.
    (a) What is amniocentesis ?
    (b) Why it is banned ?
22. Write one advantage and disadvantage of Natural method of contraception ?
23. The treatment facility advertised on the brochure of a private clinic is shown below
    a)Can you suggest what type of clinic is?
    b)Make a brief note on any three of the treatment procedure?

IVF	ZIFT	GIFT	IUI

24. Diagram shown below is a surgical method used for female sterilization
    a) What is the method shown in the diagram?
    b) Mention any two IUDs to prevent conception?
    c)what is surgical method of male sterilization called?



25. Write any 2 reason for population explosion ?
26. A wide range of contraceptive methods are presently available. If so,
    (a) Name one contraceptive method having least side effect.
    (b) Which contraceptive method is generally advised for females as a termination method to prevent any more pregnancies ?
    (c) How copper releasing IUDs prevent conception?
27. Write an account on oral contraceptive pills and its mechanism in preventing conception ?
28. Amniocentesis for sex determination is banned in our country? Is this Ban necessary? Comment one use of amniocentesis?
29. What is/are the use/s of Amniocentesis ?
30. Write one advantage of Cervical cap over condom ? Write the mechanism of action of cervical cap in female ?
31. Read the following statement and Correct the statement if it is wrong
    a) Condom is used to cover the penis in the male or vagina and cervix in the female
    b) Use of IUDs protecting the user from contracting STDs and AIDS
    c) Lactational amenorrhea reported to be effective only upto a maximum period of Two months following parturition
    d) Diaphragms, cervical caps and vaults are inserted into the female reproductive tract to cover the cervix during coitus.
32. Expand the following
    a)MMR b)IMR
33. Why surgical method is not a Good/ideal contraceptive method ?
34. There are several method of in vitro fertilisation to assist couples who lack the ability of fertilisation.
    (a) Give the popular name of the programme

(b) Suggest two techniques of in vitro fertilisation and their conditions of transfer to assist these people

35. Write any two difference between Vasectomy and Tubectomy
36. Different contraceptive methods are used to control population explosion. Summarise the natural method and barrier method of contraception?
37. Write any two advantage of using condom ?
38. Categorize the following ART's based on their application in male sterility and female sterility:

GIFT, AI

39. Vasectomy and tubectomy are said to be effective and irreversible contraceptive methods. Differentiate between these two methods.
40. Some techniques commonly used for infertility treatment are given below. Read them carefully and answer the question

ZIFT,GIFT,ICSI,IUI,IVF

a) Which of the above techniques is used for the collection of sperm from the husband or a healthy donor and artificially introduced into the vagina or uterus of the female?

b)Distinguish between ZIFT and GIFT

c)Write the common term used to denote the techniques given below ?

41. Diagnostic report of two couples having infertility problem are given below :
    1) The Women cannot produce ovum
    2) The man has very low sperm count in semen.

    Suggest a suitable assisted reproductive technology (ART) for each problem in expanded form.
42. One couple came to know that they have a girl child during fourth month of pregnancy and they decided to do MTP

    a)What is MTP?

    b)At which stage of pregnancy MTP relatively safe?

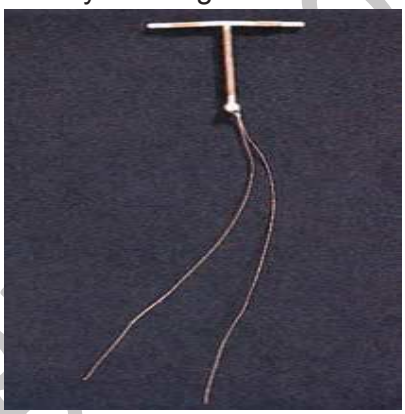
    c)How will you respond to the decision of female foeticide by the couple?
43. Mode of action of injectables and implant are similar to Pills.

    a)What is the advantage of injectables and implant over pills.

    b)What you meant by emergency contraceptive methods ?
44. From an infertility clinic a doctor advised a childless couple to undergo GIFT.

    I. Expand GIFT

    2. Mention the steps involved in this procedure
45. Identify the diagram and write how it acts



<u>Each question carries three score</u>

46. Write the difference between

    a)ZIFT and GIFT

    b)AI and IUI

    c)Invitro fertilization and Invivo fertilisation
47. Suggest any 3 methods to assist infertile couple to- have children
48. Categorise the given birth control methods into three groups with proper heads.

    (Cervical caps, Vasectomy, Cu T, Tubectomy, Diaphragms, Condoms, Lippes Loop)
49. Sterilization and IUDs are effective birth control measures, but lactational amenorrhoea may not be so effective

    a)How the sterilization procedure of male differ from that of female in preventing pregnancy?

    b) Which part of the female reproductive organ is utilized for the IUD procedure? How this procedure prevents pregnancy?

    c)Why the lactational amenrrhoea is not so effective?

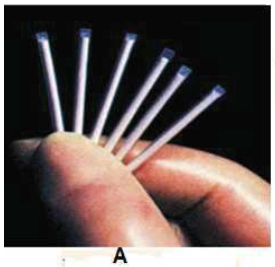
50. (a) Expand STDs.
    (b) Cite any two examples for STD.
    (c) Suggest any two methods for the prevention of STDs.
51. "STDs present a major health concern in both industrialization and developing countries"
    a) What you meant by STD?
    b) Name two STDs?
    c) Suggest two preventive measures?
52. Suggest the ART which may be successful in the following conditions
    a)A female cannot produce an ovum, but can provide suitable environment for fertilization and further development
    b)Male partner is unable to inseminate the female or has very poor sperm count
    c)Fusion of gamete and zygote formation doesnot occur within the body of female
53. Sexually transmitted infections (STIs) are mainly transmitted through sexual contact
    a)Name any two examples of STIs?
    b)Explain any two methods adopted to prevent STIs ?
54. Classify the following methods of contraception under two heading

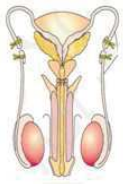
cervical caps
Periodic abstinence :
Diaphragms
Coitus interruptus :
Lactational amenorrhea
Vaults

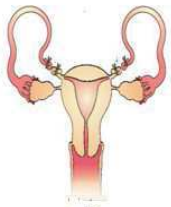
55. Classify the following IUDs under 3 Heading

Progestasert,
Lippes loop ,LNG-20
CuT, Cu7,
Multiload 375

56. Oral pills are used by female in preventing conception
    a)Which hormones are present in it ?
    b)Write any two advantage of using pills ?
    c)Name a Non steroid pill developed by scientist of CDRI.
57. Identify the methods A,B, and C


A


B


C

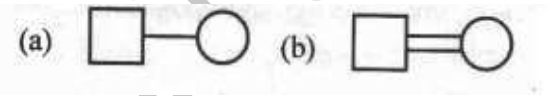
58. Expand the following
    a)MTP b)IUDs
    c)IMR c)IVF-ET
    d)ZIFT e)GIFT
    f)IUI g)AI
    h)ART i)STIs
    j)PID k)VD
    l)CDRI m)MMR
    n)
59. what are sexually transmitted infections (STIs).Write any two examples of STIs,? Write any 2 methods to avoid it ?
60. Government of India legalised MTP in 1971 with some strict conditions to avoid its misuse
    a)What is MTP? Why MTP is Performing ?
    b)What is its misuse ?
61. Name the Method of contraception used below
    a) the male partner withdraws his penis from the vagina just before ejaculation so as to avoid insemination
    b) as long as the mother breast-feeds the child fully, chances of conception are almost nil
    c) the couples avoid or abstain from coitus from day 10 to 17 (Fertile period- Because chances of fertilization re very high during this period) of the menstrual cycle when ovulation could be expected

PRINCIPLES OF INHERITENCE AND VARIATION

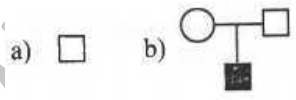
Each question carry one score

1. Which of the following is not a character studied by mendel
   a)Plant Height b)Seed Shape
   c)Pod Shape d)Flower Size
2. Alternative form of a gene is called.....
3. The physical appearance of an organism is called…….
4. The complete genetic constitution of an organism is called ……..
5. In which type of inheritance ,both genotypic and phenotypic ratio is 1:2:1 in F2 ?
6. How many autosomes and sex chromosomes are there in a human gamete ?
   a)44 and 2
   b)21 and 2
   c)22 and 1
   d)46 and 1
7. Note the relationship between first two terms and filll the blank
   a) ii = O Blood group
      I^Ai = ……..
   b) GAG= Glutamic acid
      GUG= ……..
   c) Haemophilia= Sex linked recessive
      Sickle cell anemia=…….
   d) 44A+XXY = Klinfelter's syndrome
      45A+XX =……..
      44A+XO= ……
8. Write the genetic make up of a single human sperm
   a)44A+XY
   b)44A+XX
   c)22A+X
   d)23A+Y
9. Find the odd one and write the reason for selection
   a) Down's syndrome, Haemophilia, Turner's syndrome, Klinfelters syndrome
   b) Down's syndrome, Sickle cell anaemia Turner's syndrome, Klinfelters syndrome
10. A couple has 5 daughters, what will be the probability that their 6th baby is a boy
    a)1/2 b)3/4 c)1/5 d)2/5
11. From the following, find out the symbol used in the human pedigree analysis representing male.

12. Identify the following symbols in pedigree Analysis



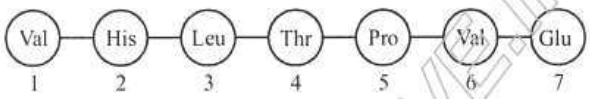
13. Observe the symbols below



a) Identify a and b
b) What is the use of these symbols in genetics?

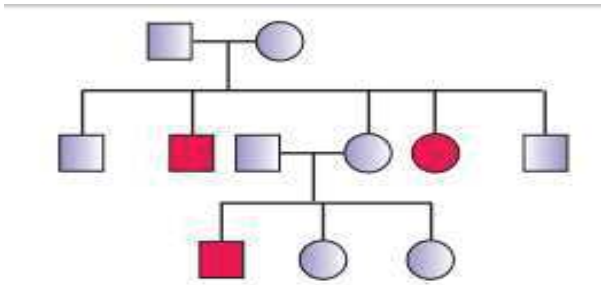
14. Which of the following is not a trait studied by Mendel
    a)Tall plant b)Wrinkled seed
    c)Pink Flower d)Terminal Flower
15. The frequency of occurring Royal disease or Haemophilia is high in the pedigree of Royal families of Queen Victoria. Which of the following cannot be generally inferred from this?
    a)Queen Victoria was not homozygous for the disease
    b)Many heterozygous families were there in the Royal family
    c)Non-Royal families were not affected with haemophilia
    d)There is less possibility to become a female diseased
    e)Generally a diseased female cannot survive after the first menstruation
    f)Pedigree analysis is the study of inheritance patterns of traits in human female

16. Examine the following fragment of beta globin chain in human haemoglobin and identify the hereditary disease with reason



Each question carry two score

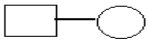
17. a)Name the type of Inheritance show in the pedigree



b)Name any Genetic disorder which show same Type of inheritance ?

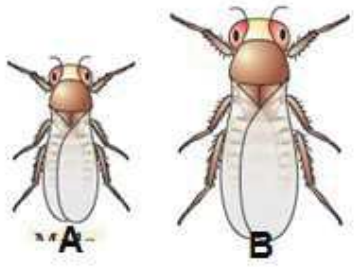
18. The possibility of a female becoming hemophilic is extremely rare, Why ?

19. Symbols used in human pedigree analysis and their meanings are provided in the table. Fill in the blanks with suitable meaning or symbols

symbols	Meaning
	...a.....
.....b.....	female
	mating
	...c.....
....d.....	affected male

20. In a cross between a true breeding red flowered and a true breeding white flowered plants, the F1 generation was pink coloured flowers. From this cross –
(a) Identify the Inheritance.
(b) Give an example for this type of Inheritance.
(c) Write the F2 phenotypic and genotypic ratio

21. The experimental verification of the chromosomal theory of inheritance shown by Thomas Hunt Morgan and his colleagues Using tiny Fruit fly (*Drossophila melanogaster*)
a)Write any 4 reason for selecting Fruit fly as his experimental material ?
b)By observing the following figure , mark Male and female drosophila ?



22. Complete the table using appropriate terms :

Klinefelter's syndrome	(a)	Sterile Male
(b)	44A + XO	(c)
(d)	Trisomy 21	Mental retardation

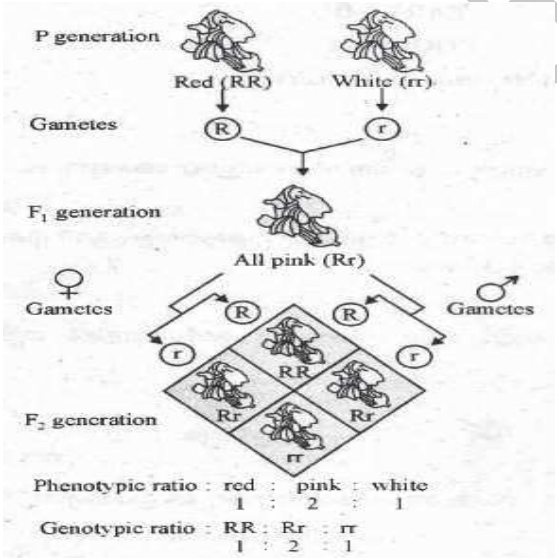
23. Correct the following statements, if there is any mistake :
(a) Haemophilia is a autosome linked recessive disease.
(b) Turner's syndrome is due to the presence of an additional copy of X chromosome

24. A couple has 4 offsprings with 4 different blood groups (ie. A,B,AB, and O) what will be the genotype and phenotype of parents?

25. "The sex of the baby is determined by the father and not by the mother. Do you agree with this statement? Substantiate your answer

26. ABO blood grouping is an example for Co Dominance
a)Which gene controls Blood group in human
b)How many different genotypes are there for ABO blood grouping system
c)How many different phenotypes are there for ABO blood grouping system

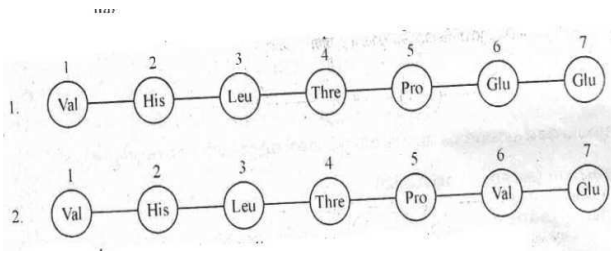
27. What will be the chance of getting a normal progeny when a Carrier Sickle cell anemic male (Hb^a Hb^s) Marries to a carrier female (Hb^a Hb^s). Show the cross
28. Gopalan argues that if the father is of 'A' blood group, Mother is of 'B' blood group. Their children can be only be 'A' group, 'B' group or 'AB' group.
    a) Do you agree with Gopalan's arguement?
    b) Give reason for your argument?
29. What are the possible genotypes of
    a)A Blood group
    b)AB blood group
    c)O Blood group
30. What is pedigree analysis ? Write the symbol for affected male and Normal male.
31. Drosophila is an ideal material for genetic study. Give 2 reasons.
32. The blood group of a child is 'O'. His father is with 'A' blood group and mother with 'B' blood group. Write, down the genotype of the child and genotypes of parents.



    a) Observe the above cross and name this phenomenon?
    b) Write down the theoretically given explanation of the phenomenon
33. From a clinical laboratory, Ramu's blood group was identified as 'AB' goup. But his father has 'A' blood group and mother has is 'B' blood group.
    a)Is Ramu's blood group identification correct?
    b) Substantiate your answer using co dominance principle.
34. It is evident that, it is the genetic make of a sperm that determine the sex of the child in human beings. Substantiate
35. A couple has 2 daughters. The blood group of husband and wife is
    a)What is possible blood groups of the children should have?
    b)Whether any change in blood group will occur if they have two sons instead of daughters?
36. Read the following statement thoroughly
    - Starch synthesis in pea seeds is controlled by one gene. It has two alleles (B and b)
    - BB------→starch synthesized effectively (Large sized starch grains)
    - bb--------→ lesser efficiency in starch synthesis (Small sized starch grains)
    - **Bb------→ Intermediate sized starch grains**

    a)Bb produce intermediate sized starch grain is an example for which kind of inheritance
    b)What will be the genotypic and Phentypic ratio in F2, when a BB is crossed with bb
37. Identify the type of Inheritance
    a)heterozygous offspring show intermediate character between 2 parents
    b) both alleles of gene are expressed in heterozygous condition
38. The blood group of Navas and Lulu are 'O' Blood group. They have two daughters.
    a)What will be the blood group of their First daughter ?
    b)What will be the genotype of their second daughter.
39. Kumar- allways blame his wife for delivering consecutive girl children. Analyse the situation scientifically and state whether you agree with kumar?
40. The following diagram shows amino acid sequences of a part of β chain of

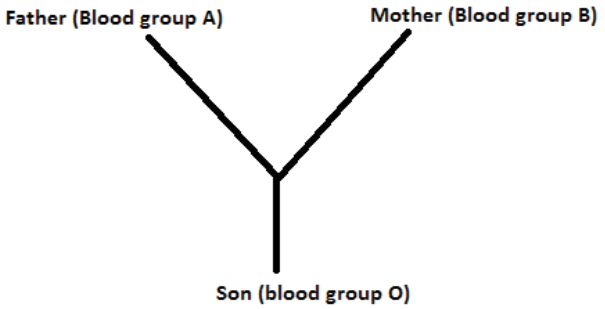
haemoglobin of 2 individuals. Observe the amino acid sequence and answer the following questions :



a)which among the above indicate sickle cell anemic condition ?
b) justify your answer ?
c) describe what is single base substitution ?

41. Haemophilia and Sickle cell anaemia are Mendelian disorders
(a)What do you mean by mendelian disorder
(b) which one of above is Sex linked disorder ?
c)Why haemophilia is more common in male than female ?

42. Study the following cross and answer the questions.
[Hint: ABO blood group in man is controlled by three alleles I^A, I^B and i.]



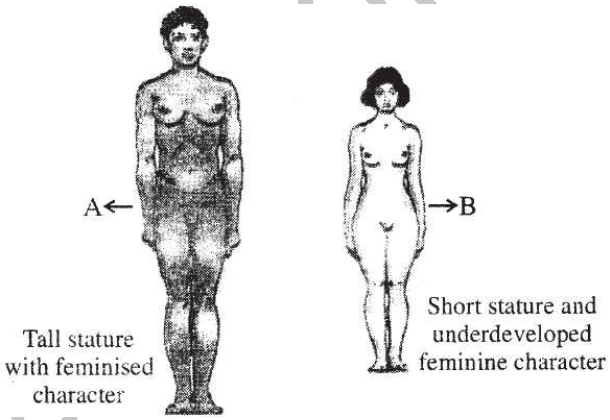
a)Write the genotypes of Father, Mother and Son.
b)The type of dominance of human blood group inheritance is……

43. The family of Queen Victoria shows a number of Haemophilic descendants as she was the carrier of the disease. Name the pattern of inheritance of this Royal disease.

44. The first child of a couple is affected with sickle cell anaemia .During the second pregnancy they visited a genetic counsellor and Prepared a pedigree chart of their family.
a)What is pedigree analysis?
b)Draw the symbols for
i) Affected female
ii) Sex unspecified
iii)Consanguineous mating

45. Sex of the Baby is determined by the father, not by the mother. Substantiate

46. Observe the figure and answer the question



a) Identify the syndromes A and B.?
b) What is the chromosome numbers in A and B?

47. Difference in chromosome number of some human being A,B,C, and D is given below:
A)22 pairs of Autosome
B)22 pairs of Autosome +XO
C)22 pairs of Autosome+ 1 autosome
D)22 pairs of Autosome+ XXY
a) Identify the person with who suffers from Klinfelter's syndrome. Write its symptoms
b)Differentiate between aneuploidy and polyploidy ?

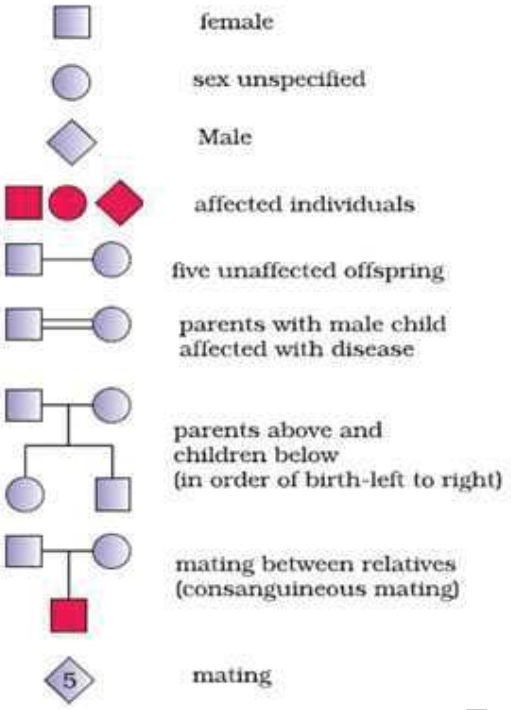
48. Complete the tale using suitable term

Turner's syndrome	.....a.....	Sterile female
---------b--------	44A+XXY	.....c.....
--------d---------	Trisomy-21	Mental retardation

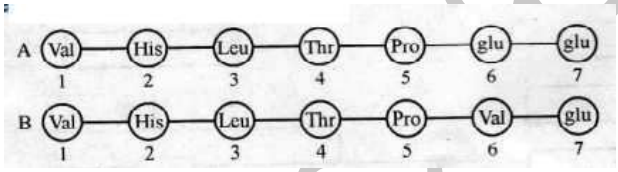
Each question carries three score

49. Show a cross between a true-breeding red-flowered (RR) *Antirrhinum* and true breeding white-flowered *Antirrhinum* plants (rr), up to F2.Write genotypic and Phenotypic ratio of the same ?

50. Match the following

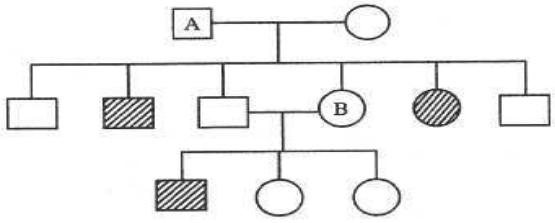


51. The amino acid composition of the relevant portion of β chain molecules (A & B) are shown below.



a)Which one of the polypeptide chain is abnormal ?
b) Name the disorder caused by it ?
c) What is the reason for this abnormality?
d)what is the effect of this abnormality in such individual ?

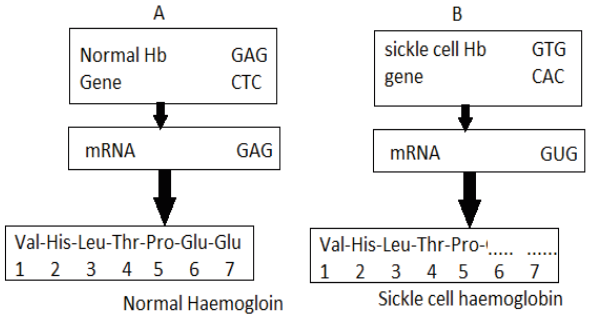
52. Diagrammatic representation of the pedigree analysis of the inheritance of sickle cell anaemia is shown below.



a)Name the type of inheritance shown in the figure ?
b) Write the genotype of A and B?
(Hint : Disease is controlled by a pair of allele Hb^A and Hb^s)
c)Represent pedigree analysis of an X linked Recessive Inheritance diagrammatically

53. Classify the disorder under two heading
Down's syndrome, Haemophilia, Sickle cell anaemia, Turner's syndrome, Klinfelters syndrome

54. The flow chart A and B given below represents the inheritance of normal haemoglobin and sickle cell haemoglobin (3.5)



a) Observe the Flow chart A and complete the flow chart B
b) Note down the genotype of a sickle cell anaemia patient and mention the symptom of the disease
c) Mention the peculiarity of Hb^AHB^s phenotype

55. The genetic disorder is caused due to the presence of an additional copy of X Chromosome
a) Name this disorder
b) Write the Karyotype of this disorder
c) Suggest any other characteristic feature of this disorder.

56. Polypeptide chains of two haemoglobin molecules are shown below. One of the chains shows an abnormality. Observe the diagram and answer the following questions

a) Which of the polypeptide chain in the haemoglobin is abnormal leading to a disease?
b)What is the reason for this abnormality ?
c)What will be the effect of this change in polypeptide chain

57. Identify the Chromosomal disease
a)Patient with short statured with small round head, with furrowed tongue and with partially open mouth
b)Patient withGyanecomastia
c)Patient with rudimentary ovary and lack secondary sexual character

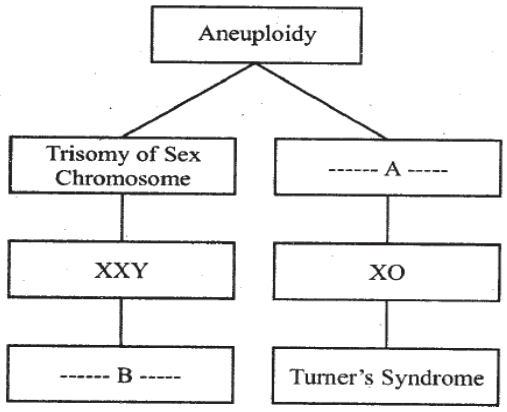
58. Identify the syndrome from the genotype given below:
a)44 Autosome + XXY
b) 44 Autosome +XO
c) 45 Autosome + XX/XY

59. Classify the following things under 3 Heading

T,r,R,Tall plant,Round Seed, TT,Rr

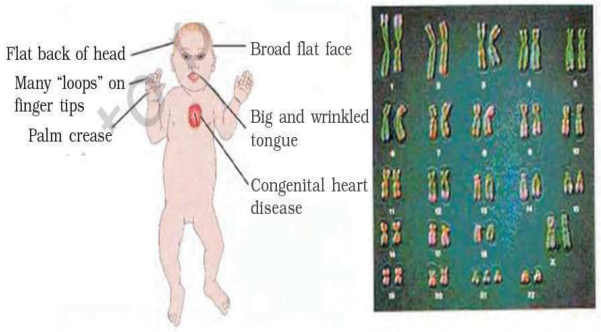
Alleles	Phenotype	Genotype

60. a)Complete the flow chart of chromosomal disorder by filling the blank boxes (A and B)



b)What is aneuploidy ?

61.



a)Identify the syndrome from the diagram, and write the genotype?
b)It occurs in both sexes (Male and female)? Write the reason

62. After analyzing the karyotype of a short statured Round headed person with mental retardation, a general physician noticed an addition of autosomal chromosome .
Answer the following question
a)Addition or deletion of chromosome generally result in.....
b)What may be the possible syndrome or disorder of the above person should suspected to be?
c)Suggest two or more morphological peculiarity to confirm the chromosome disorder in that person?

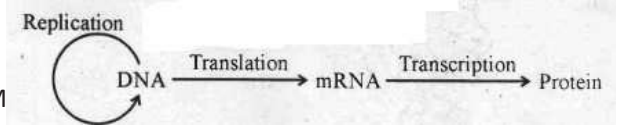
63. Some genetic abnormalities, their genotype and features are distributed in Column A,B and C respectively . Match them correctly

Column A	Column B	Column B
Down's syndrome	44A+XO	Rudimentary ovary and sterility
Turner's syndrome	44A+XXY	Furrowed tongue and partially opened mouth
Klinfelter's syndrome	45A+XX/XY	Gynaecomastia and sterility

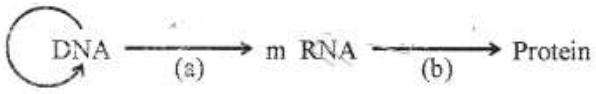
MOLECULAR BASIS OF INHERITENCE

Each question carry one score

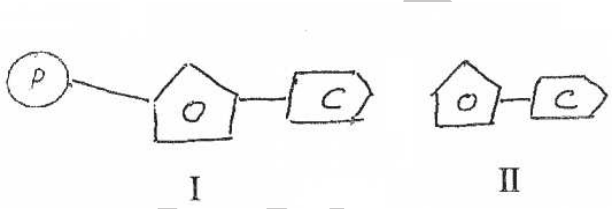
1. Expresses sequence in the gene is called
   a)Introns b)Muton
   c)Exons d)Cistron
2. The Pitch of the DNA Helix is
   a)3.4nm b)20nm
   c)0.34nm d)34nm
3. Which of the following act as the back bone of DNA double helix
   a)Sugar-Nitrogen base
   b)Nitrogen base pairs
   c)Sugar-Phosphate
   d)Nitrogen base-Phosphate
4. Find the odd one and write the reason for selection
   a)AUG ,UAA,UGA,UAG
   b)Thiamine,Deoxyribose,Phosphate,Ribose
5. Stability to the helical structure of DNA is provided by..... and .....
6. Okazaki fragments formed during dna replication are joined by ……enzyme.
7. There are roughly ……. Base pairs in each turn of DNA
   a) 10 b)20 c)34 d)33
8. The unequivocal proof that DNA is the genetic material came from the experiments of
   a) Alfred Hershey and Martha Chase
   b)Griffith's Transforming principle
   c)Meselson-Stahl Experiment
   d)Miller experiment
9. Find the odd one and write the common feature of the other
   Cytidine,adenine,Thymine,guanine
10. A DNA sequence is provided below.
    5'ATGCATGCATGCATGCATGCATGCAT3'
    Write down the sequence of its complementary strand.
11. Diagrammatic representation of the central dogma given below is **not correct.** Make necessary corrections and redraw it



12. The flow of genetic information is shown below. Name the process of A and B



13. Diagrams of components of DNA are given below:
    Identify and differentiate the two diagrams I and II

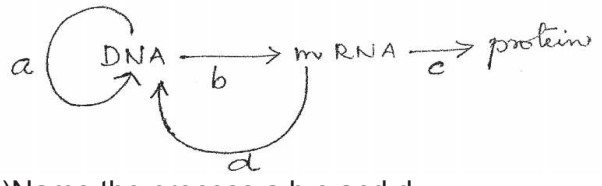


Each question carries two score

14. Write the function of the following enzyme in DNA Replication
    a)DNA dependent DNA Polymerase
    b)DNA ligase
15. Frederick Griffith conducted experiment on Streptococus bacteria. There are 2 strains of pneumococcus bacteria-S and R strain. Write any two difference to identify the same ?
16. Match the following

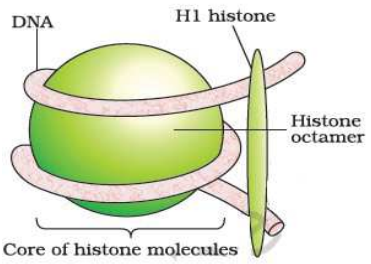
Column A	Column B
Frederick Griffith	Lac operon
Jacob and Monod	Transforming principle
Hershey-Chase experiment	Central dogma in molecular biology
Francis Crick	Bacteriophage

17. The flow of genetic information is shown below



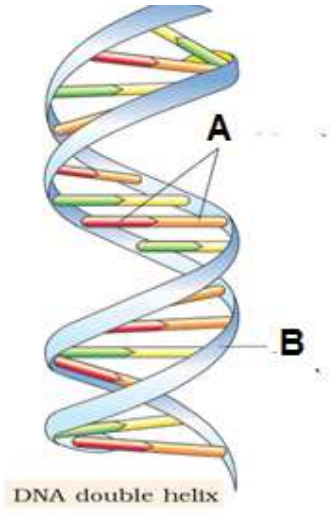
    a)Name the process a,b,c and d
    b)Who proposed central dogma in molecular biology.
18. Expand
    a)NHC b)BAC c)YAC d)HGP

19. Write any two salient features of Double helix features of DNA
20. Write any two difference between euchromatin and heterochromatin
21. Explain the structure of nucleosome with the help of picture shown below.



-NUCLEOSOME-

22. Double helix structure of DNA is given below

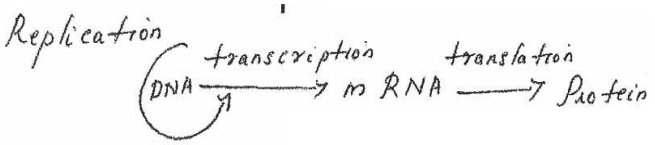


DNA double helix

a)Label A and B

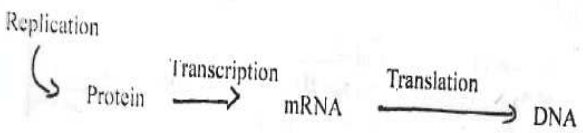
b) The two chains of DNA are coiled in ..... handed fashion

23. There are 64 triplet codons in Checker board. One codon codes for only one amino acid. If so, there should be 64 aminoacids. But proteins made of only 20 different types of aminoacids. Evaluate this statement in the light of genetic code salient features.
24. Write one word for the following
    a) One codon codes for only one amino acid
    b) Some amino acids are coded by more than one codon
25. A double stranded DNA contains 20% of adenine nucleotides, what will be the percentage of Guanine,cytosine and Thyamine nucleotides ?
26. a)Identify the diagram and explain

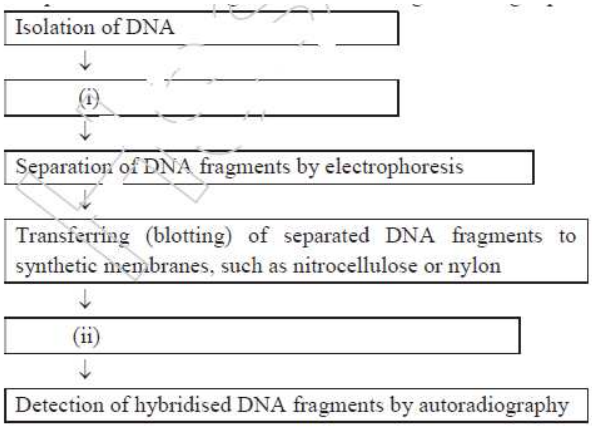


b) In some cases DNA is produced from RNA. Name this process and give example ?

27. A double stranded DNA contains 100 adenine and 110 guanine nucleotides
    a)Find total number of nucleotides in this DNA
    b)Calculate Total number of Base pair in this DNA
28. Analyze the figure, find out the error and correct it.

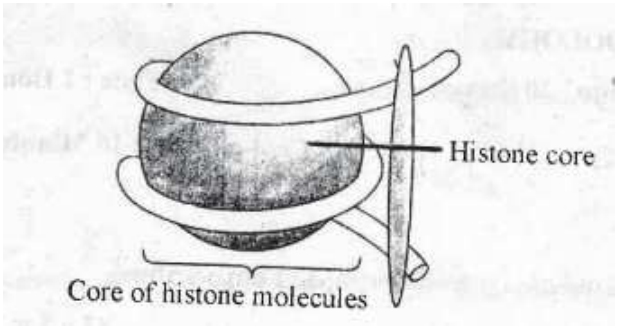


29. (a) Complete the flow chart given below showing DNA finger-printing technique.



(b) Who developed the DNA finger-printing technique ?

30. Observe the figure given below :



a) Identify the figure.

b) How many histone molecules are present in the Histone core ?

c)Distinguish Euchromatin and Heterochromatin.

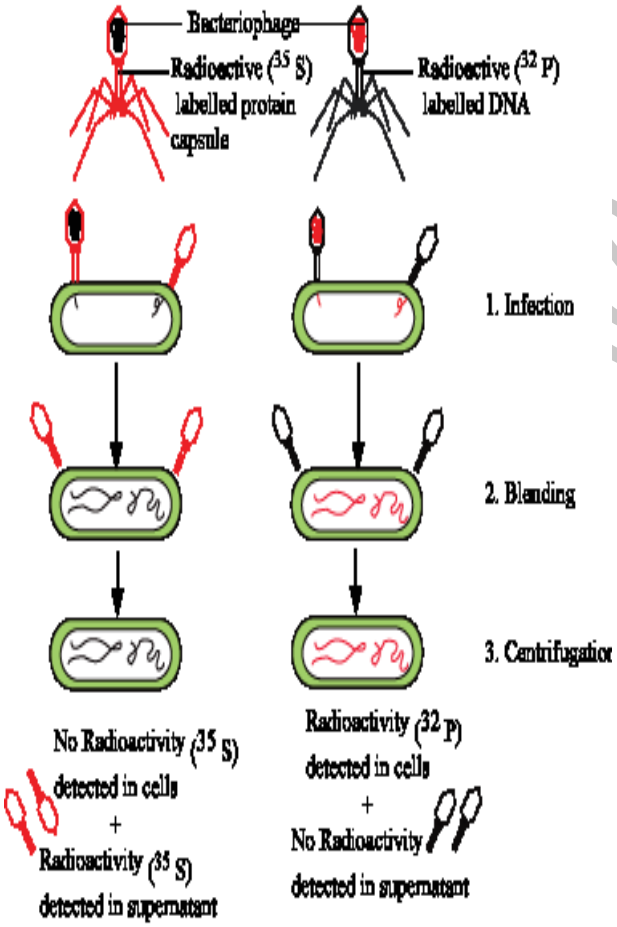
31. Read the following statement about gene,if you find any mistake-Correct it

a) The coding sequences or expressed sequences are defined as Introns.

b) Exons are said to be those sequence that appear in mature or processed RNA.

c) Introns or intervening sequences appear in mature or processed RNA.

32. Observe the experiment

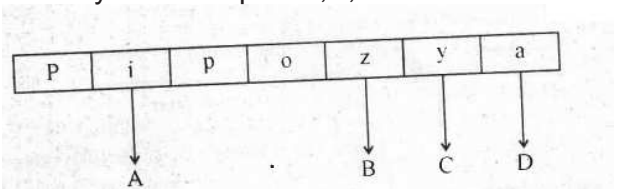


a) Identify the process

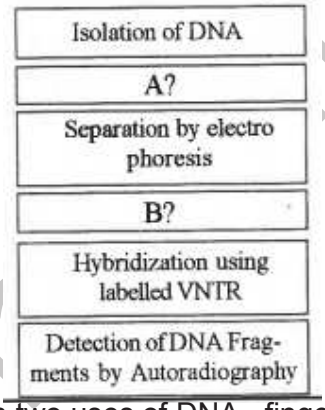
b)What is the outcome from this experiment ?

33. a) In Lac-operon lactose act as inducer molecule. Evaluate the statement

34. Observe the diagram of Lac –Operon and Identify Labelled part A,B,C and



35. Complete the flow chart of Southern blot hybridization



c)Mention two uses of DNA fingerprinting.

36. Write any 4 salient features of genetic code ?

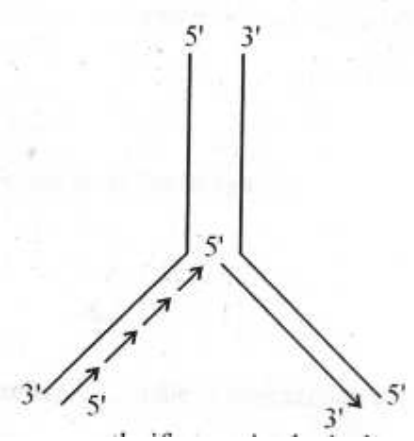
37. Answer the following

a)How uniform distance is generates approximately between the two strands of the DNA helix ?

b)The nitrogen bases in Two strands of DNA are paired through .....bonds

38. Presence of lactose enhances the production of beta galactosidase and other enzymes in bacteria . How will you explain this phenomenon ?

39. Observe the diagram

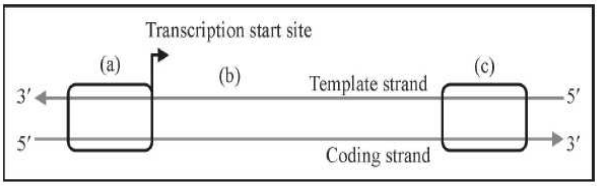


a)Redraw the diagram correctly if any mistake is there ?

b)what does the diagram indicate?

b)What is the function of DNA ligase in this process ?

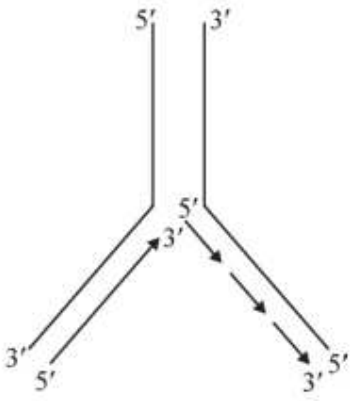
40. If the length of E. coli DNA is 1.36 mm, can you calculate the number of base pairs in E.coli?
41. DNA is tightly packed structure and is found as units called nucleosomes
    (a) Explain the concept of nucleosomes
    (b)Differentiate between euchromatin and hetero chromatin
42. Schematic structure of a transcription unit is given below :



(a) Identify a, b and c.

(b) The coding sequences/expressed sequences in eukaryotes are known as _____.

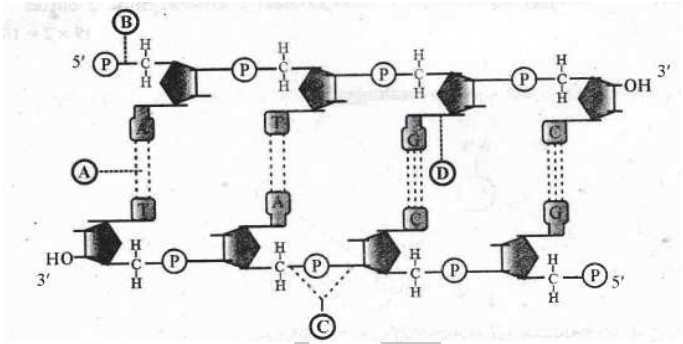
43. One of the salient features of genetic code is “Universal”.
    (a) Write any other two salient features of Genetic code
    b) Which is the initiator codon ? And name the amino acid it codes.
44. Observe the figure given below :



(a) Identify the process in the picture.

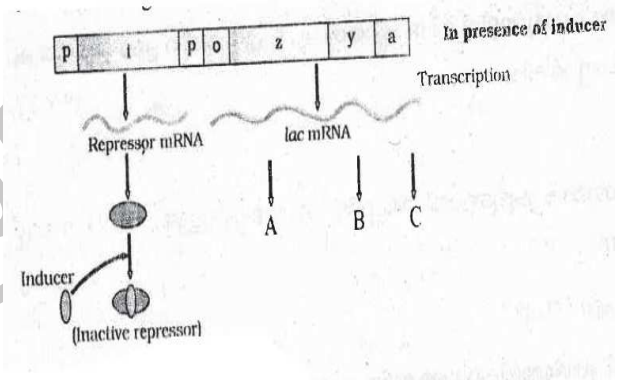
(b) Name any two enzymes needed for this process.

45. In a double stranded DNA, the ratios between Adenine and Thymine, Guanine and Cytosine are constant and equal one. Who observed this fact ?
46. Observe the diagram of a double stranded DNA strand :



Identify the bonds A, B, C & D.

47. Observe the diagram and answer the following



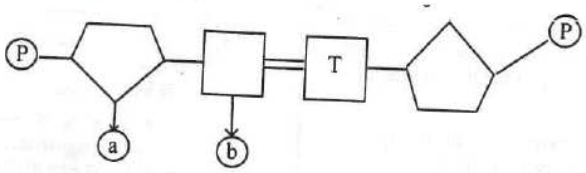
a)Identify the diagram

b)Name the enzymes A,B, and C

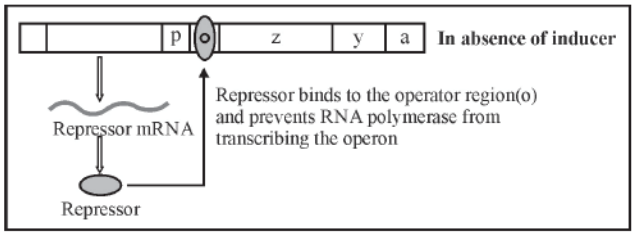
48. One of the feature of Genetic code is , ‘genetic code is universal’-Evaluate this statement with the help of an example

<u>Each question carries three score</u>

49. The diagram given below show a segment of DNA, Label the part (a) and (b)



50. Lactose catabolism in the absence of inducer in E. Coli is given below



(a) Identify 'P'.

(b) Draw the diagram in the presence of inducer.

(c) Write the enzymes produced by the structural genes 'z', 'y' and 'a'.

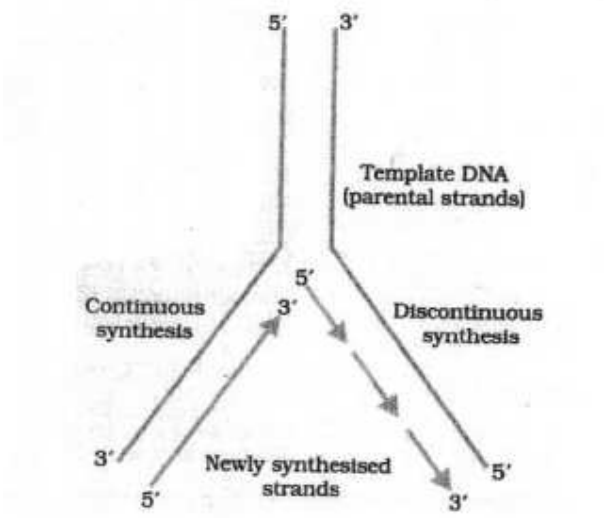
51. Following are the first two steps in Griffiths transformation experiment

1) S strain → Inject into mice → mice live
2) R strain → Inject into mice → mice die

a)If there is any mistake correct it

b)write the remaining steps ?

52. Observe the given diagram and answer the following questions. (2)



a)Identify the above process.

b)Name the enzyme required to polymerise the DNAstrand.

c) Name the enzyme required to join the discontinuous strands

d) In eukaryotes replication of DNA occurs at ……phase of cell cycle.

53. a) The hints of lac Operon is given below

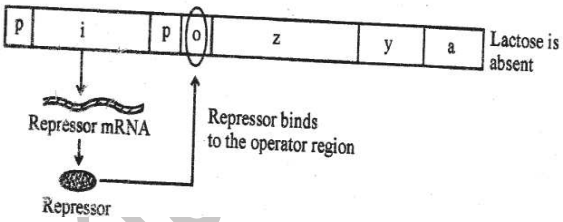
Hints :

Inducer, Repressor,
Structural genes, operator
Regulatory gene

a)which substance is acting as inducer in this operon ?

b)explain the working of operon in the presence of inducer ?

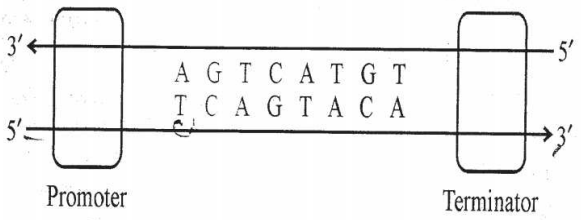
54. Observe the following diagram and answer the question?



a) Diagrammatically represent changes takes place when lactose is added to medium?

b) What is the role of z,y, and a gene in this metabolic pathway ?

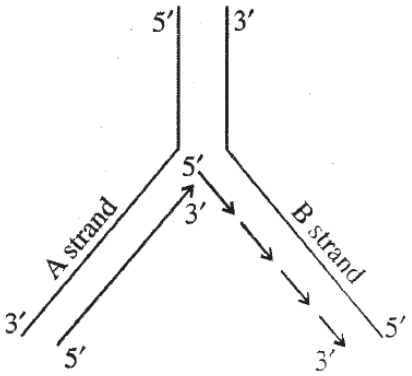
55. A transcription unit is given below. Observe it and answer the question (3)



a)How can you identify the coding strand ?

b)Write the sequence of RNA formed from this unit ?

56. Observe the diagram and answer the question?



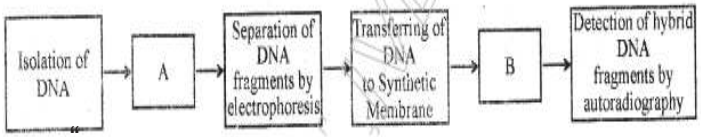
a)What is the difference in the replication process in strand A and strand B ?

b) What is the role of DNA ligase in the replication process in B strand ?

c)what is meant by replication fork ?

57. Why lactose is called as an Inducer in Lac Operon ? how long the lac operon would be expressed in the presence of lactose?
58. Why glucose or galactose cannot act as inducers for lac operon ?
59. Regulation of lac operon by repressor is referred to as negative regulation. Evaluate this statement.
60. A transcription unit in a DNA is defined by 3 regions. Write the name of any 2 regions?
61. a) The steps in DNA Finger printing are given below. Complete the flow chart (A and B)

b)Mention the application of DNA finger printing

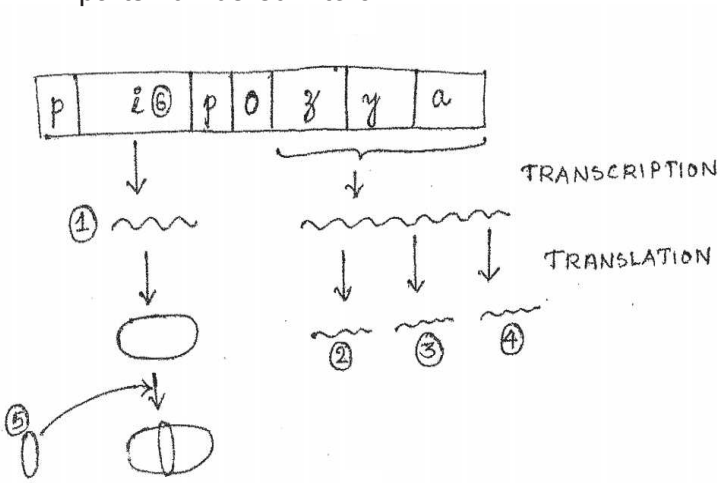


62. Prediction of the sequence of aminoacids from the nucleotide sequence in mRNA is very easy, but the exact prediction of nucleotide sequence in mRNA from the sequence of amino acids coded by mRNA is difficult"

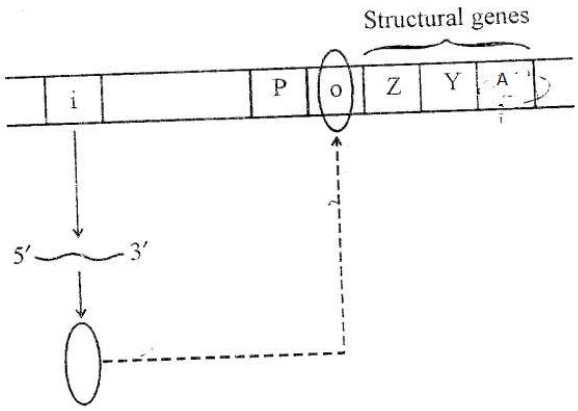
a)Which property of genetic code is the reason for the above condition ? Explain

b)Which are the stop codons in DNA transcription ?

63. Given below is the figure showing the functioning of lac operon in presence of lactose. Redraw the figure and label the parts numbered 1 to 6



64. The total length of Human DNA is 2.2m,How such lengthy dna is packed within microscopic nucleus of dimension 10^{-6}m
65. In E.coli Lactose catabolism is controlled by Lac Operon. Lac operon in the absence of inducer (Lactose) is given below. (3)



a)What is 'P'?

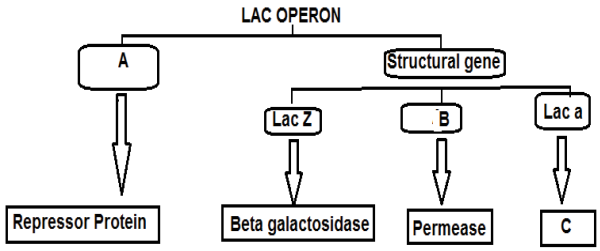
b)Name the enzyme produced by the structural gene 'Z','Y', and 'A' ?

c)Re draw the diagram in the presence of an Inducer

66. a)Label A,B and C

b) Which Protein bind to the operator gene in the absence of lactose in culture medium

c) Which enzyme helps in the Increase permeability of cell to beta-galactosides.



67. A transcription unit in a DNA is defined by 3 regions
    a)Name the region where DNA dependent RNA polymerase binds
    b)Name the segment of Coding strand from which RNA is formed ?
    c)Name the region where transcription stops.
68. A small fragment of a skin of different person was extracted from nails of a murdered person. This fragment of skin led the crime investigators to the murder. Ased on this incident answer the following questions
    (1) What technique was used by the investigators
    (2) What is the procedure involved in this technique