

RAMAKRISHNA SENIOR SECONDARY SCHOOL
SUMMER HOLIDAY HOMEWORK
CLASS XII (2023-24)

Dear Parents
Greetings from the RKS !

The Academic Session 2023-24 has begun in full swing and students have settled well in their classes. Now is the time for Summer Break. The School will be closed for Summer Break from May **31, 2023** to **July 2, 2023**. The school will reopen on **July 3, 2023**. In order to keep our students well engaged, we are sending the **Summer Holiday Homework**.

General Instructions:-

1. Revise the syllabus covered so far in the class to prepare for Periodic Tests, which will be held in the month of July.
2. Do all the work as specified by the subject teacher.
3. Submit your Holiday Homework in the first week of July as per the teacher's instructions.
4. The students must do their work neatly in their own handwriting. Marks of Internal Assessment will be awarded only if the students do the work in their own handwriting.

Summer Vacations are the most awaited holidays by the students. It is also a time to enjoy those little pleasures of life that get overlooked during the busy school routine. They get a positive bounce back when they rejoin school after this much-needed break. There are a few things that students can keep in mind to utilize this break fruitfully.

- Go for educational trips and excursions.
- Spend quality time with family and friends
- Pursue your hobbies and interests
- Sharpen your skills and develop new ones
- Follow a fitness regime to stay agile both mentally and physically
- Learn and explore new things
- Relax your body and mind because, **“A Healthy Mind Lives in a Healthy Body.”**

Have a delightful and productive Summer Break!

ENGLISH:

1. **Prepare a General Studies Project on the topic ‘Science and Society’ on A4 sized white ruled sheets.**

Resources such as newspapers, books, magazines, TV Channels and internet (relevant website) can be used.

The project should include the following:

- Title of the topic
- Introduction to the topic/ Nature of Science

- How science and society are related / Science as a social enterprise
- Role of science in society
- Role of science in developing society
- What will be your contribution or an appeal to the people for the topic you have been allotted
- Conclusion (clearly mentioning if you want to strengthen a move or you want to condemn it- depending on the topic)
- Bibliography/ list of resources used

2. Attempt the following Comprehension Passages in Evergreen Practice Papers:

- Evergreen Test Assignment-1 to Evergreen Test Assignment 7 (Page no. 21 to 33)

3. Attempt the following Notice Writing questions in Evergreen Practice papers:

- Evergreen Test Assignment 3, Q. 1, Page -58
- Evergreen Test Assignment 3, Q. 2, Page -58
- Evergreen Test Assignment 4, Q. 5, Page -60

4. Attempt the following Letter Writing questions in Evergreen Practice papers:

- Evergreen Test Assignment 15, Q. 1, Page -115
- Evergreen Test Assignment 17, Q. 3, Page -119

5. Revise the syllabus covered so far in the class for the PT-1 Examination.

Physics

Do the following questions from NCERT

Chapter 1 – Electrostatics

Example – 1.6, 1.7, 1.8, 1.9, 1.11, 1.12

Exercise – 1.6, 1.7, 1.8, 1.9, 1.12, 1.14, 1.15, 1.18, 1.22, 1.23

Chapter 2 – Electric potential and capacitance

Example – 2.1, 2.3, 2.4, 2.9, 2.10

Exercise – 2.1, 2.3, 2.4, 2.8, 2.11, 2.12, 2.21, 2.25

Make a project on General Studies on the topic.

“Career Pathways “

- Goal setting
- Common carrier path
- Internship as a medium of transition from schools to universities.

CHEMISTRY

1. GENERAL STUDIES PROJECT (as per CBSE guidelines)

Topic : Contemporary problems of Indian Society

Prepare a project report on the above topic.

Instructions to be followed:

1. Maximum pages: 8- 10
2. Use white A4 sized ruled sheets(one side) only
3. Sub topics to be covered in the project report:
 - Issues related to women
 - Health Care system
 - Contemporary phase

2. CHEMISTRY INVESTIGATORY PROJECT (as per CBSE guidelines)

Instructions to be followed:

1. Use white A4 sized ruled sheets(one side) only.
2. Pattern to be followed while preparing the project:
 - Page 1 : Title of the project
 - Page 2: Certificate
 - Page 3: Acknowledgement
 - Page 4: Index
 - Page 5-6: Introduction/Theory
 - Page 7: Reagents and apparatus used
 - Page 8-9: Experimental studies/Procedure
 - Page 10: Observations and results
 - Page 11: Conclusion
 - Page 12: References

3. Revise and practice all the assignments and question banks given for PT 1.

SUBJECT : COMPUTER SCIENCE [All HHW to be submitted on 3rd July]

- Revise the syllabus of PT 1 for the exam in July. (Ch1, 2, 3, 4, 5 (Text Files) and 10)
- Do Q39 (Pg 239), Q42 (Pg 240), Q43 (Pg 240), Q8 & Q9 (Pg 252) in CW/HW register.
- Do the following questions on Python IDLE and write the code with output in your CW/HW register :-
 1. WAP to take a no. from user & calculate and print Factorial of it using Function.
 2. WAP to take a no. from user & calculate and print reverse of it using Function.
 3. WAP to take a no. from user & check and print it is palindrome no. or not using Function.
 4. Write a Python program to multiply all the numbers in a list by 10 and display.

5. Write a Python program to get the smallest number from a list.
6. Write a python program to create and read the city.txt file in one go and print the contents on the output screen.
7. Write a function count_lines() to count and display the total number of lines from the file friends.txt.

- Make a General Studies Project for the given topic covering the given sub points. The project must include 10-12 pages as discussed in class.

Social Responsibility

- 1) Types of Social Responsibility
- 2) Role of Students within a group
- 3) Principles of Socially Responsible behaviour

- Do the Computer Science Project as discussed in class

Mathematics :

- Do the Following questions from Together with Mathematics
Page number 92 (Integrated Exercise)
Question Number 01 to 06, 08 to 17, 20 to 22, 25 to 33, 35 to 49, 51 to 71, 73, 74, 76 to 90, 95, 96 and 100 to 103.
- **Make the project on general studies on the topic "Human Rights"**
 1. The universal declaration of Human Rights and it's significance
 2. The responsibility of individuals, communities, and business in promoting Human Rights.
 3. The relationship between Human Rights and sustainable development

Physical Education :

File Work

1. Yoga as Preventive Measure for Lifestyle Diseases

- 1) Obesity
- 2) Diabetes
- 3) Asthma
- 4) Hypertension

*Meaning

*List of Preventive Asanas

*Asanas and Pranayamas are helpful to cure Asthma.

(explain any two from list)

2. Write detailed explanation of any one GAME of your choice in Physical Education file out of the list below:

*Basketball, Volleyball, Kho-Kho, Football, Kabaddi, Hockey, Cricket and Handball.

Including:

1. History of the game
2. Labelled diagram of field/court paste/draw.
3. Equipment used
4. Fundamentals Skills
5. Terminologies
6. Basic Rules

- Make the project on general studies on the topic
 - ° The Universal Declaration of Human Rights and its significance.
 - ° The responsibility of individual communities and business in promoting Human rights.
 - ° The relationship between Human rights and sustainable development.
 - Prepare a project for H.P.E. Sewa on the topic " Being Safe and Responsible" as discussed in the class.
-

Painting :

1. Make two compositions with three human figures and complete with water colors or pencil colors.
2. Make two beautiful Landscapes with pastel colors or water colors.

Size : Half Ivory sheet or cartridge sheet

Biology :

Q1. Make project on Topic – “Social Responsibility” which must include :

- Types of social responsibility.
- Role of students within a group.
- Principles of social responsible.

Q2. Do all the experiments in the file as discussed in class . Complete your practical file.

Q3. Do these Objective Type Questions in your class notebook:

SEXUAL REPRODUCTION IN FLOWERING PLANTS

Question 1:

Why can we not use the term seed for maize grain?

Question 2:

How many meiotic divisions are required to produce 76 seeds in a guava fruit?

Question 3:

Case study-based questions: Read the given passage and answer Q3 i, ii, iii, iv & v

Pollen grains are generally spherical shaped and each is surrounded by two layers- exine and intine. Exine is made up of sporopollenin which is resistant to high temperatures and strong acids and alkali. Sporopollenin remains absent at germ pores. Pollen grains are well preserved as fossils because of the presence of sporopollenin. The inner wall of pollen grain is intine. The pollen grains are mainly shed at 2-celled stage-vegetative cell and generative cell when they are matured. Pollen grains of many species cause severe allergies and bronchial afflictions, leading to chronic respiratory disorders. It is mentioned that Parthenium or carrot grass that came into India as contaminant with imported wheat, has become ubiquitous in occurrence and causes pollen allergy. However, pollen grains are rich in nutrients which are used pollen tablets as food supplements. In western countries, large number of pollen products in the form of tablets and syrups are available in the market which are claimed to increase the performance of athletes and race horses.

(i) **Assertion.** Sporopollenin is an oxidative polymer of carotenoids which helps in fossilization.

Reason. Sporopollenin is a tough substance that provides resistant to biological decomposition, high temperature and alkali.

- (a) Both assertion and reason are true, and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true, but reason is not the correct explanation of the assertion.
- (c) Assertion is true but reason is false.
- (d) Both assertion and reason are false.

(ii) Which of the following statements is not appropriate for pollen grains:

- (a) Pollen grains can be stored for years in liquid nitrogen and can used in crop breeding programmes.
- (b) Pollen grains are rich in nutrients and can be used as pollen tablets as food supplements.

- (c) Bee pollen are available in western countries in the form of tablets.
- (d) Pollen consumption has potential inhibitory action which results in decreased energy in athletes and race horses.

(iii) Pollen allergy is common in many people during spring, summer and fall as plants release tiny pollen grains in tremendous quantity. Which of the following is not associated with pollen allergy?

- (a) Sneezing, stuffy nose and watery eyes
- (b) Asthma, bronchitis
- (c) Cough, itchy nose, roof of mouth or throat
- (d) Fever, diarrhoea and vomiting

(iv) Which of the following set does not cause allergy?

- (a) Ragweed parthenium
- (b) Sagebrush
- (c) Amaranth (pigweed)
- (d) Acacia

(v) The function of germ pore in pollen grain is

- (a) Emergence of radicle
- (c) Initiation of pollen tube
- (b) Absorption of water for seed germination
- (d) All of these

Question 4:

Read the following and answer questions given below from (i) to (v)

A flower of tomato plant following the process of sexual reproduction produces 240 viable seeds. The viable seeds are those which have the ability to remain alive and may develop into plants and reproduce themselves in the given appropriate conditions. This happens when one of the pollen grain reaches to the stigma by any agency at 2-celled stage vegetative cell and generative cell. The generative cell divides mitotically and forms two male gametes which enters into ovule after passing through pollen tube and undergoes the process of double fertilization in the ovule. The ovule is a large parenchymatous body formed in the ovary by megasporogenesis. The megaspore mother cell in an ovule is a diploid structure which undergoes meiotic division and forms one functional megaspore. The megaspore undergoes three subsequent divisions and forms 8 nuclei arranging themselves in 3 groups. After fertilization, the ovule converts into the seed and whole ovary develops into a complete fruit.

(i) The minimum number of pollen grains that must have been involved in the pollination of its pistil are

- (a) 60
- (b) 120
- (c) 180
- (d) 240

(ii) The minimum number of microspore mother cells must have undergone reductional division prior to dehiscence of anther are:

- (a) 60
- (b) 90
- (c) 180
- (d) 240

(iii) The male gametes that might have involved in this case are :

- (a) 120
- (b) 240
- (c) 360
- (d) 480

(iv) The minimal number of ovules present in the ovary would be:

- (a) 60
- (b) 120
- (c) 180
- (d) 240

(v) Megaspore mother cells involved in this process are:

- (a) 120
- (b) 180
- (c) 240
- (d) 360

Question 5:

Read the following and answer questions given below from i to iv

In major approaches of crop improvement programme as in crossing experiments, it is important to make sure that only the desired pollen grains are used for pollination and the stigma is protected from contamination from unwanted pollens. So, if the female parent bears bisexual flowers, removal of anthers from the flower bud before the anther dehiscence is necessary (Emasculation). Emasculated flowers have to be covered with bags of suitable size to prevent contamination of their stigma with unwanted pollen-bagging. When the stigma of

bagged flower attains receptivity, mature pollen grains collected from anthers of the male parent are dusted on the stigma and the flowers are rebagged and the fruits are allowed to develop. If the female parent produces unisexual flowers, there is no need for emasculation.

(i) While planning for an artificial hybridisation involving dioecious plants, which of the following steps would not be relevant?

- (a) Bagging of female flower
- (b) Dusting of pollen on stigma
- (c) Emasculation
- (d) Collection of pollen

(ii) **Assertion.** If the female parent produces unisexual flowers, there is no need of emasculation.

Reason. Emasculation is the removal of anthers from the flower bud before the anther dehisces.

- (a) Both assertion and reason are true, and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true, but reason is not the correct explanation of the assertion.
- (c) Assertion is true but reason is false.
- (d) Both assertion and reason are false.

(iii) Artificial hybridization denotes to:

- (a) production of seedless fruits
- (b) evolve seeds without fertilization
- (c) crop improvement programme
- (d) occurrence of more than one embryo in a seed.

(iv) The correct sequence to perform artificial hybridization is

- (a) Bagging → Emasculation → Rebagging → Cross pollination
- (b) Emasculation → Bagging → Cross pollination → Rebagging
- (c) Cross pollination → Emasculation - Bagging → Rebagging
- (d) Bagging → Rebagging → Cross pollination → Emasculation

Question 6:

Enlist the chromosome no. in ovum, first polar body and second polar body of human body.

Question 7:

Select the correct sequence for transport of sperm cells in male reproductive system:

- (a) Seminiferous tubules → Vasa efferentia → Epididymis → Inguinal canal → Urethra
- (b) Testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus.
- (c) Testis → Epididymis → Vasa efferentia → Rete testis → Inguinal canal → Urethra
- (d) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus

Question 8:

Directions: In the following questions A, B, C, D, E & F, a statement of Assertion is followed by a statement of Reason.

Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

A. **Assertion.** Only a single functional female gamete is formed from each primary oocyte cell.

Reason. Meiosis in each primary oocyte gives rise to only one cell, which function as ovum.

B. **Assertion.** Placenta, in addition to, provides connection with mother and foetus to ductless gland.

Reason. It releases human gonodotropins.

C. **Assertion.** A chemical substance fertilizing is found in the egg of animals.

Reason. It helps in the maturation of embryo after fertilization.

D. **Assertion.** The shape of the uterus is like an inverted pear.

Reason. The inner glandular layer that lines the uterine cavity is called endometrium.

E. **Assertion.** The opening of the vagina is often covered partially by a membrane called hymen.

Reason. The hymen is often torn during the first coitus-intercourse.

F. **Assertion.** Luteinising hormone (LH) acts at the sertoli cells and stimulates the synthesis and secretion of androgens.

Reason. Androgens stimulate the process of oogenesis.

Question 9:

Read the following and answer questions given below from (i) to (v)

Each month during the years between puberty and menopause, a woman's body goes through a number of changes to get it ready for possible pregnancy. During each menstrual cycle, an egg develops and is released from the ovaries. The lining of the uterus builds up. If a pregnancy does not happen, the uterine lining sheds during a menstrual period. A woman's menstrual cycle is divided into four phases: menstrual phase, follicular phase, ovulation phase and luteal phase and each phase is controlled by hormones. The ovulation phase lasts about 6 hours during which woman can get pregnant. During ovulation, a slight rise in basal body temperature and thicker discharge that has the texture of egg whites held. Ovulation happens at around 14 day of menstrual cycle. After a day, the egg will die or dissolve if it is not fertilized. Sperm can live up to 5 days and if a woman has sex as much as five days prior to ovulation, pregnancy can occur.

(i) The process of ovulation takes place on _____ day of menstrual cycle

- (a) 10
- (b) 12
- (c) 14
- (d) 16

(ii) **Assertion.** Ruptured Graafian follicles form the corpus luteum.

Reason. Ovulation takes place under the influence of hormone LH secreted by anterior pituitary.

- (a) Both assertion and reason are true, and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true but reason is not the correct explanation.
- (c) Assertion is true but reason is false.
- (d) Both assertion and reason are false.

(iii) Which of the following statement is not appropriate for ovulation?

- (a) Ovulation phase lasts for 6 hours
- (b) A slight rise in basal body temperature occurs during ovulation
- (c) The ovum in primary oocyte stage is released by the rupture of Graafian follicle under the influence of LH hormone
- (d) No conspicuous changes occurs in the uterine endometrium.

- (iv) The membranous cover of the ovum at ovulation is
- (a) Corona radiata
 - (b) Zona pellucida
 - (c) Zona radiata
 - (d) Chorion

- (v) Corpus luteum in pregnancy has ____ life.
- (a) 10-12 days
 - (b) long
 - (c) 14-28 days
 - (d) negligible

Question 10:

Read the following and answer questions given below from (i) to (v)

The average duration of human pregnancy is about 9 months. Vigorous contractions of uterus occurs at the end of pregnancy due to foetal ejection reflex originated from fully developed foetus and placenta by releasing oxytocin from maternal pituitary. Oxytocin acts on the uterine muscle and causes strong uterine contractions leading to expulsion of the baby out of the uterus through birth canal-parturition. After parturition, lactation starts and umbilical cord and placenta comes out with the baby. The cord blood contains cells called hematopoietic stem cells. These cells can turn into any kind of blood cells and can be used for transplant that can cure diseases such as blood disorders, immune deficiencies, metabolic diseases and some kinds of cancers. Research is revealing more and more ways it can save lives. It is precious-almost magical and absolutely worth to preserve it for the family use or to donate it in blood bank, to be needed by another family.

(i) An umbilical cord is:

- (a) a large artery in the womb
- (b) a large vein in the womb
- (c) the wall that surrounds the developing foetus
- (d) a structure that connects a foetus to the mother placenta

(ii) **Assertion.** An umbilical cord is stored in developed countries as a source for Future stem cell.

Reason. An umbilical cord contains hematopoietic' stem cells and can be used for curing various acute diseases.

- (a) Both assertion and reason are true, and reason is the correct explanation of assertion
- (b) Both assertion and reason are true but reason is not the correct explanation.
- (c) Assertion is true but reason is false.
- (d) Both assertion and reason are false.

- (iii) Blood flowing in umbilical cord is:
- (a) 50% maternal and 50% foetal
 - (b) 100% foetal
 - (c) 100% maternal
 - (d) 75% maternal and 25% foetal

- (iv) The main hormone involved in parturition is:
- (a) Oxytocin
 - (b) Prolactin
 - (c) hCG
 - (d) Progesterone

- (v) Which of the following disease cannot be treated with cord blood?
- (a) Lymphomas
 - (b) Bone marrow cancer
 - (c) Sickle cell disease
 - (d) Kwashiorkor

Question 11:

The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females

- a) who cannot retain the foetus inside uterus
- b) who cannot produce an ovum
- c) whose cervical canal is too narrow to allow passage for the sperms
- d) who cannot provide suitable environment for fertilization

Question 12:

Choose the correct statement regarding the ZIFT procedure:

- a) ova collected from a female donor are transferred into the fallopian tube to facilitate zygote formation.
- b) The zygote or early embryo up to 8 blastomeres is transferred into the fallopian tube.
- c) zygote is collected from a female donor and transferred to the uterus
- d) ova collected from a female donor and transferred to the uterus

Question 13:

Medical termination of pregnancy (MTP) is considered safe up to how many weeks of pregnancy?

- a) 18 weeks
- b) 6 weeks
- c) 8 weeks
- d) 12 weeks

Question 14:

The prenatal technique to determine the genetic disorders in a foetus is called

- a) Laparoscopy b) abstinence c) Coitus interruptus d) Amniocentesis

Question 15:

Progestogens in the contraceptive pills

- a) prevents attachment of zygote to endometrium
b) alter the quality of cervical mucus to prevent entry of sperms.
c) inhibits ovulation
d) All the above

ASSERTION AND REASONING TYPE OF QUESTIONS -

These questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses.

- A. If both Assertion and Reason are true and the Reason is correct explanation of the Assertion.
B. If both Assertion and Reason are true but the Reason is not a correct explanation of the Assertion.
C. If Assertion is true but the Reason is false.
D. If both Assertion and Reason are false

Question 16:

Assertion: Use of condom is a safeguard against AIDS and sexual diseases besides checking pregnancy.

Reason: Certain contraceptives are planted under the skin of the upper arm to prevent pregnancy.

Question 17:

Assertion: Amniocentesis is often misused.

Reason: Amniocentesis is meant for determining the genetic disorders in the foetus, but is being used to determine the sex of the foetus so that female foetus may be aborted.

Question 18:

Assertion: Zero population growth should be achieved as early as possible to control human population.

Reason: This requires not two children per couple but a little more.

Question 19:

Assertion: Mother should not be blamed for the birth of girls in the family.

Reason: Father is responsible for the sex of the child.

SEXUALLY TRANSMITTED DISEASES - STDs constitute a major public health problem for both developing and developed countries. The emergence of HIV infection has increased the importance of measures aimed at control of STDs. A proper understanding of the patterns of STDs prevailing in different geographic regions of a country is necessary for proper planning and implementation of STD control strategies. It is with this aim that the authors have reviewed the relevant published literature from India over the past 25 years. To sum up, bacterial STDs like chancroid and Gonorrhoea are showing a declining trend, but the viral STDs like herpes genitalis and condylomata acuminata are showing upward trend. There is a decline in the number of patients with STDs attending the hospital. Whether this is due to an actual decrease in the incidence of STDs or due to other factors is uncertain. The increased availability of facilities for treatment of STDs at peripheral centres might be a factor leading to a decline in the number of patients with STDs approaching higher centres like the teaching hospital where this study was undertaken. The emphasis on the syndromic approach to the management of STDs might have increased the accessibility to healthcare for these patients with STDs. Awareness about HIV and fear of STDs are factors of reducing infection with STDs. Another factor to be considered is the widespread use of antibacterials, including quinolones and the new macrolides, for the treatment of other diseases. This can result in partial treatment or modified course of the bacterial STDs, thereby leading to apparent reduction in the total number of cases of STDs attending STD clinics as well as a decrease in the proportion of bacterial to viral STDs.

Question 20:

(i) Which of the following is not a bacterial STD?

- A) Syphilis B) Gonorrhoea C) Herpes genitalis D) Chlamydiasis

(ii) Choose the odd one out-

- A) Genital herpes B) Genital warts C) Trichomoniasis D) Hepatitis B

(iii) Which of the following symptoms is not seen in case of an STD?

- A) Slight pain in genitals
B) Swelling in the genitals
C) Itching and fluid discharge from the genitals
D) Redness/discoloration in the genitals

(iv) Which of the following is not a complication which arises when STDs are not treated on time?

- A) PID B) Infertility C) Cancer of the rectum D) Still births

Question 21:

Gynaecomastia is a symptom of

- a) Turner's syndrome b) SARS
c) Klinefelter's syndrome d) Down's syndrome

Question 22:

In a monohybrid cross involving incomplete dominance, the phenotypic ratio equals the genotypic ratio in F₂ generation. The ratio is

- a) 3:1 b) 1:2:1 c) 1:1:1:1 d) 9:7

Question 23:

A human male produces sperms with the genotypes AB, Ab, aB and ab pertaining to the diallelic characters in equal proportions. What is the corresponding genotype of this person?

- a) AaBB b) AABb c) AABB d) AaBb

Question 24:

Which of the following conditions is called monosomic?

- a) $2n+1$ b) $2n+2$ c) $n+1$ d) $2n-1$

Question 25:

A pea plant parent having violet colour flowers with unknown genotype was crossed with a plant having white colour flowers, in the progeny 50% flowers were violet and 50% were white. The genotypic constitution of the parent having violet colour flower was

- a) Homozygous b) Merozygous c) Heterozygous d) Hemizygous

ASSERTION AND REASONING TYPE OF QUESTIONS -

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- A. If both Assertion and Reason are true and the Reason is correct explanation of the Assertion.
- B. If both Assertion and Reason are true but the Reason is not a correct explanation of the Assertion.
- C. If Assertion is true but the Reason is false.
- D. If both Assertion and Reason are false

Question 26:

Assertion: In four o'clock plant or Snap dragon plant, a cross between homozygous white flowered individual and a homozygous red flowered one, produces pink flowered plants.

Reason: In these plants, the flower colour is determined by three alleles.

Question 27:

Assertion: It is not possible for human parents heterozygous for skin colour to have children darker or lighter than themselves.

Reason: Human skin colour is controlled by a single pair of alleles.

Question 28:

Assertion: The person heterozygous for sickle-cell trait produces both normal (HbA) and abnormal haemoglobin (Hbs)

Reason: Heterozygous individuals appear apparently unaffected but they are carrier of the disease as there is 50% chance of transmission of the mutant gene.

Question 29:

Assertion: Haemophilia shows criss-cross inheritance

Reason: The gene that causes haemophilia is recessive and lies in the sex (X) chromosome.

Question 30:

MENDELIAN DISORDERS - Broadly, genetic disorders may be grouped into two categories - Mendelian disorders and Chromosomal disorders. Mendelian disorders are mainly determined by alteration or mutation in the single gene. These disorders are transmitted to the offspring on the same lines as we have studied in the principles of inheritance. Most common and prevalent Mendelian disorders are Haemophilia, Cystic fibrosis, Sickle cell anaemia, Colour blindness, Phenylketonuria, Thalassemia. The Mendelian disorders may be recessive or dominant. Similarly, the trait may also be linked to the case of sex chromosome like haemophilia. It is evident that this X - linked recessive trait shows transmission from carrier female to male progeny. A Mendelian disorder occurs if the mutated

gene is found either in homozygous or in heterozygous forms. A recessive disease only expressed in the homozygous genotype, whereas the dominant diseases expressed in heterozygous genotype also. The defected/mutated gene may be found on the autosome, like in thalassemia, the alpha type, gene is found on chromosome number 16 and beta type gene is found on chromosome number 11. On the other hand, when the defected gene is on X chromosome, then it will be considered as X linked diseases. Father never transmit X linked diseases to the son, because son inherits Y chromosome from his father (not the X-chromosome) and this chromosome does not has any gene of the diseases.

(i) Which two colours cannot be identified in the colour blindness:

- a. Blue & green
- b. Red & green
- c. Violet & blue
- d. Red & blue

(ii) A female with gene of colour blindness may be normal, because: -

- a. One X chromosome has the defected /mutated gene while other X-chromosome is normal
- b. Both X chromosomes have defected/mutated gene.
- c. Y chromosome has the defected/muted gene.
- d. Both A & B

(iii) A son does not inherit X linked Mendelian disease from affected father because: -

- a. The gene is located on X chromosome.
- b. Father transmits Y chromosome to his son, not the X-chromosome.
- c. Father's X chromosome is transmitted to the daughter.
- d. All of the above

(iv) Sickle cell Anaemia and thalassemia are different from each other: -

- a. They created by autosomal genes.
- b. They are related to the disorder of blood.
- c. They are autosomal recessive diseases.
- d. Sickle cell anaemia is qualitative and thalassemia is quantitative diseases.