# RAMAKRISHNA SENIOR SECONDARY SCHOOL

## SUMMER HOLIDAY HOMEWORK

### CLASS XII (2026-27)

**Dear Parents**

***Greetings from the RKS Fraternity***!

The Academic Session 2026-27 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 30**, 2026** to June30**, 2025**. The school will reopen on **July 1, 2026**. In order to keep our students well engaged, we are sending the **Summer Holiday Homework**.

**General Instructions**:-

1. Do all the work as specified by the subject teacher.
2. Submit your Holiday Homework in the first week of July as per the teacher‟s instructions.
3. 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**:

**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 the internet (relevant websites) 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. **ENGLISH PROJECT**

**Dear Students**

Prepare a 15–20 page English project for your Final Board Practical Assessment and submit it in August. The project must be neat, original, and well-organized. Use reliable sources such as books, newspapers, magazines, websites, and interviews. Avoid plagiarism.

**Topics According to Roll Numbers:**

**Roll Nos. 1–10 (Survey-Based Project):**

Common Fears Faced by Teenagers and Ways to Overcome Them
(Use Google Forms or printed questionnaires to conduct the survey and analyze responses.)

**Roll Nos. 11–20 (Research-Based Project):**

Relevance of Silence and Meditation in Modern Life
(Explore the importance of silence, peace, and self-reflection in modern life through literary and real-life examples.)

**Roll Nos. 21 onwards (Interview-Based Project):**

Changing Career Choices Among Teenagers
(Interview students, teachers, and counselors to compare traditional and modern career trends.)

---

**Project Format**

1. Title Page
2.Acknowledgement
3. Certificate
4. Index5. Action Research (2–3 pages)
6. Project in Depth (5–10 pages)
7. Reflection (2–3 pages)
8. Conclusion (2–3 pages)
9. Bibliography

3. Attempt the following Comprehension Passages in **Evergreen Practice Papers:**
● Evergreen Test Assignment 6
● Evergreen Test Assignment 10

4. Attempt the following **Notice Writing** questions in your **English Notebook:**

i. Draft a notice for the school notice board informing students about a workshop on career counselling and personality development.
ii. Your school is celebrating International Yoga Day. Write a notice inviting students to participate in the yoga session being conducted on the school grounds.

5. Taking ideas from the lesson **"Lost Spring"**, write an article on **"Child Labour - A Curse to Society"** in about 120-150 words in your **English notebook.**

6. After reading the poem 'Keeping Quiet' from the Flamingo Book, do the following in your **English Notebook:**
● **Imagine you are Pablo Neruda. Write a diary entry** explaining why people need moments of silence in life.
● Enlist the poetic devices used in the poem, giving examples.

7. Read the chapter - **'The RATTRAP'** from Flamingo Book and do the written work already marked in the class in your **English Notebook.**

8. **Reading Project**

Novel: The Blue Umbrella By Ruskin Bond
Instructions:
Read the Novel carefully during the summer vacation.
Activity to develop critical thinking, comprehension skills, and creative skills in learners.

**Submission Guidelines:**

● Submit your project in a neatly bound file with a cover page.
● Project should be Handwritten only.
● Diagrams, illustrations, and photos (if used) must be pasted neatly

**PHYSICS**:

1. Investigatory project.

Topics already Have been allotted and discussed in class.

2. To prepare Activity File

Three Activities are to be written from section A. And Three Activities from Section B .

The activities also have been discussed in class.

---

The Activity file will be made seperately apart from Practical file.

**3. 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

**CHEMISTRY**

1. Prepare a GENERAL STUDIES PROJECT (as per CBSE guidelines)

**Topic : Contemporary problems of Indian Society-**

**3. Sub topics to be covered in the project**

4. **Issues related to women**
5. **Health care system**
6. **Contemporary phase**

**Instructions to be followed:**

i. Maximum pages: 8- 10

ii. Use white A4 sized ruled sheets(one side) only

**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**
**Page5-6: 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**

**Below mentioned link is for Topics assigned Roll No wise:**

**LIST OF INVESTIGATORY PROJECTS**

**4. a) Do the following questions of NCERT in your C.W/H.W notebook: Back exercise - Chapter-8**

**5. Write the practicals done so far in the practical file**

**(i) Quantitative analysis:**

**(1) (a) Preparation of the standard solution of Oxalic acid of a given volume (b) Determination of molarity of KMnO4 solution by titrating it against a standard solution of Oxalic acid.**

**(2) The above exercise [F 1 (a) and (b)] to be conducted using Ferrous ammonium sulphate**

**(Mohr's salt) .**

**(ii)Tests for the functional groups present in organic compounds:**

**(1) Aldehydes ,Ketones and Carboxylic groups.**

**6 . Practice the assignment and Question Bank QUESTION BANK OF CHEMISTRY CLASS 12**

---

**MATHS**

- **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.

Take the printout of Pdf file posted in google classroom and paste them in class work notebook and solve the questions.

---

**COMPUTER SCIENCE**

**COMPUTER SCIENCE [All HHW to be submitted on July 1]**

A. 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 fact().
2. WAP to take a no. from user & calculate and print reverse of it using Function reverse().
3. Write a Python program to multiply all the numbers in a list by 10 and display.
4. Write a program to display the words form a text files which are less than 4 characters by creating a function FindWords().
5. Write a user defined function in python that displays the number of lines starting with 'H' in the filepara.txt.

B. Read the concept of Binary and CSV files from chapter File Handling.

C.Make a General Studies Project for the given topic covering the given sub points.The project must include 10-12 pages. *Social Responsibility*

i) Types of Social Responsibility
ii) Role of Students within a group
iii) Principles of Socially Responsible behaviour

**BIOLOGY**

**Q1. Make project on Topic – "Social Responsibility" which must include:**

i) Types of social responsibility.
ii) Role of students within a group.
iii) Principles of Socially Responsible behaviour

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

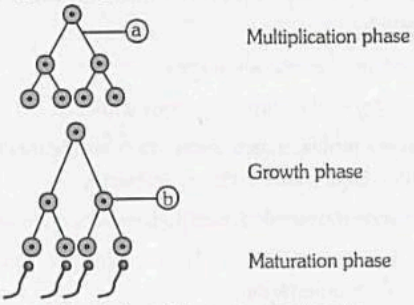
**Q3. Make investigatory project of biology as per CBSE guidelines on loose sheets.**

**Q4. Do assignment of Lesson 2 and Lesson 5. (attached)**

**Q5. Do practice from question bank uploaded in Google classroom.**

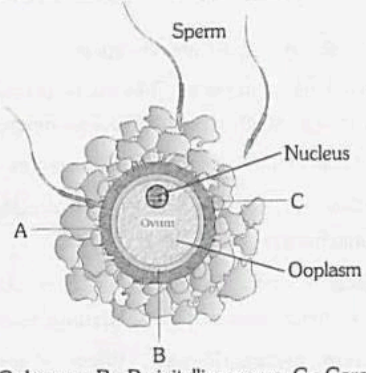
**Assignment of Lesson 2: Human Reproduction**

**3.** Which option is correct for the region labelled as 'a' and 'b' in the given diagram **[GUJCET 2014]**



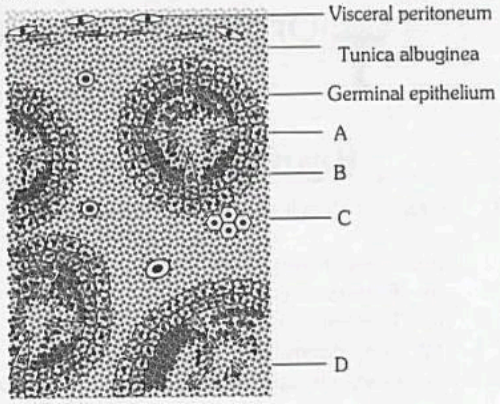

(a) a = Mitosis, b = Primary spermatocyte
(b) a = Meiosis, b = Secondary spermatocyte
(c) a = Mitosis, b = Secondary spermatocyte
(d) a = Meiosis, b = Primary spermatocyte

**4.** The given diagram shows to ovum surrounded by few sperms. Identify all the alphabets correctly **[NCERT]**




(a) A - Oolemma, B - Perivitelline space, C - Corona radiata
(b) A - Zona pellucida, B - Perivitelline space, C - Corona radiata
(c) A – Zona pellucida, B - Vitelline membrane, C - Corona radiata
(d) A - Zona pellucida, B - Perivitelline space, C - Corona reticulata

**5.** The given figure refers to T.S. of testis showing sectional view of a few seminiferous tubules. Identify the marked alphabets **[NCERT]**




(a) A - Sertoli cells, B - Spermatogonia, C - Interstitial cells, D - Sperms
(b) A - Interstitial cells, B - Spermatogonia, C - Sertoli cells, D - Sperms
(c) A - Sertoli cells, B - Secondary spermatocyte, C - Interstitial cells, D - Sperms
(d) A - Sertoli cells, B - Spermatozoa, C - Interstitial cells, D - Sperms

**6.** There are some special types of cells found in the seminiferous tubules known as sertoli cells. These are **[CBSE PMT 1992]**

(a) Germinal cells (b) Reproductive cells
(c) Somatic cells (d) Protective cells

**7.** There is a connective tissue cord extending between the testis and abdominal wall called

(a) Testis cord (b) Gubernaculum
(c) Mesentric cord (d) Spermatic cord

**8.** The elastic tissue connecting the cauda epididymis to the scrotal sac is

(a) Gubernaculum (b) Tendinous cord
(c) Scrotal ligament (d) Caput epididymis

**9.** The seminiferous tubules of the testis are lined by the germinal epithelium consisting of **[MP PMT 1998; BVP 2004; Odisha JEE 2011]**

(a) Cells of Sertoli (b) Spermatocytes
(c) Spermatogonium (d) Spermatids

**10.** Spermatogenesis is promoted by **[Odisha JEE 2008]**

(a) Oestrogen (b) Progesterone
(c) Testosterone (d) Oxytocin

**11.** Which cells in the testis secrete testosterone, the male sex harmone **[MP PMT 1992, 94; EAMCET 1998; CPMT 1999; CBSE PMT 2001; BVP 2001;BHU 2001, 04; MH CET 2005; DPMT 2007; Odisha JEE 2012]**

**Or**

Which of the following is the endocrine tissue of testes **[Pb. PMT 2000]**

(a) Interstitial cells or cells of Leydig
(b) Cells of the germinal epithelium
(c) Sertoli cells
(d) Secondary spermatocytes

**12.** If the vas deferens of a man is surgically disconnected **[MP PMT ...]**

(a) Sperms in the semen will be without nuclei
(b) Semen will be without sperms
(c) Spermatogenesis will not occur
(d) Sperms in the semen will be non-motile

**13.** The capsule enclosing testis of mammal is called as **[MP PMT 1993]**

(a) Tunica albuginea (b) Tunica membrana
(c) Tunica vaginalis (d) Tunica vesculosa

**14.** The abdominal passage which connects the abdominal cavity with the scrotal sac in mammals is known as **[NCERT]**

(a) Spermatic canal (b) Neurenteric canal
(c) Inguinal canal (d) Haversion canal

**15.** Sperm cells are produced in **[Odisha JEE 2008, 12; MP PMT 2012]**

(a) Seminiferous tubules (b) Interstitial cells
(c) Epididymis (d) Prostate gland

**16.** Gubernaculum cordis is a contractile structure that **[CMC Vellore 1993]**

(a) Pulls down the testis during breeding season into the scrotal sac
(b) Allows daily migration of the testis from the abdominal cavity into the scrotum
(c) Facilitates ejaculation of spermatozoa from the testis
(d) Keeps the testis in position

**17.** Which accessory genital gland occurs only in mammalian male **[KCET 2007]**
(a) Prostate gland (b) Perineal gland
(c) Cowper's gland (d) Bartholin gland

**18.** Testicular degeneration and other disorders of reproductive system in mammals are due to the deficiency of
(a) Vitamin *A* (b) Vitamin *B*
(c) Vitamin *K* (d) Vitamin *E*

**19.** Cowper's gland is present in **[MP PMT 1994, 95]**
(a) Cockroach (b) Rabbit
(c) Earthworm (d) Frog

**20.** Seminal plasma in humans is rich in **[NCERT; CBSE PMT 2009; CBSE PMT (Pre.) 2010]**
(a) Fructose, calcium, certain enzymes
(b) Fructose and calcium but has no enzymes
(c) Glucose and certain enzymes but has no calcium
(d) Fructose and certain enzymes but poor in calcium

**21.** Sertoli cells are found in testis. These cells are **[RPMT 1999; HPMT 2005; MP PMT 2007; Odisha JEE 2010]**
(a) Nurse cell (b) Reproductive cell
(c) Receptor cell (d) None of these

**22.** Which of the following represents a condition where the motility of the sperms is highly reduced **[KCET 2006]**
(a) Oligospermia (b) Athenospermia
(c) Azoospermia (d) Polyspermy

**23.** Secretions from which one of the following are rich in fructose, calcium and some enzymes **[NCERT; CBSE PMT (Mains) 2010]**
(a) Male accessory glands (b) Liver
(c) Pancreas (d) Salivary glands

**24.** The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is **[NCERT; CBSE PMT 2009; NEET 2013]**
(a) Spermatocyte – spermatogonia-spermatid-sperms
(b) Spermatogonia-spermatocyte-spermatid-sperms
(c) Spermatid-spermatocyte-spermatogonia-sperms
(d) Spermatogonia-spermatid-spermatocyte-sperms

**25.** In spermatogenesis, reduction division of chromosome occurs during conversion of **[Kerala PMT 2012; WB JEE 2012]**
(a) Spermatogonia to primary spermatocytes
(b) Primary spermatocytes to secondary spermatocytes
(c) Secondary spermatocytes to spermatids
(d) Spermatids to sperms

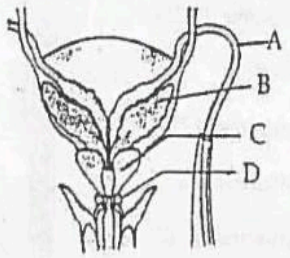
**26.** In humans, at the end of the first meiotic division, the male germ cells differentiate into be **[MP PMT 1994; CBSE PMT 2008]**
(a) Spermatids (b) Spermatozonia
(c) Primary spermatocytes (d) Secondary spermatocytes

**27.** Which one of the following statements is false in respect of viability of mammalian sperm **[NCERT; CBSE PMT (Pre.) 2012]**
(a) Sperm is viable for only up to 24 hours
(b) Survival of sperm depends on the pH of the medium and is more active in alkaline medium
(c) Viability of sperm is determined by its motility
(d) Sperms must be concentrated in a thick suspension

**28.** The acrosome of a sperm contains **[MP PMT 2010]**
(a) Hydrolytic enzymes (b) DNA
(c) Mitochondria (d) Fructose

**29.** Human sperm moves by **[Odisha JEE 2008]**
(a) Cilia (b) Flagella
(c) Basal body (d) Nucleosome

**30.** Given below is a diagrammatic sketch of a portion of human male reproductive system. Select the correct set of names of the parts labelled A, B, C, D **[NCERT; CBSE PMT 2009]**




| | A | B | C | D |
|---|---|---|---|---|
| (a) | Ureter | Prostate | Seminal vesicle | Bulboure thral gland |
| (b) | Vas deferens | Seminal vesicle | Prostate | Bulboure thral gland |
| (c) | Vas deferens | Semianl vesicle | Bulboure thral gland | Prostate |
| (d) | Ureter | Seminal vesicle | Prostate | Bulboure thral gland |

**31.** The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for **[NCERT; Kerala PMT 2005; CBSE PMT (Pre.) 2011]**
(a) Providing a secondary sexual feature for exhibiting the male sex
(b) Maintaining the scrotal temperature lower than the internal body temperature
(c) Escaping any possible compression by the visceral organs
(d) Providing more space for the growth of epididymis

**32.** Heterogametic male condition does not occur in **[MHCET 2(**
(a) Birds (b) Humans
(c) *Drosophila* (d) Honey bee

**33.** In the absence of acrosome, the sperm ..... **[KCET 2010]**
(a) Cannot penetrate the egg (b) Cannot get energy
(c) Cannot get food (d) Cannot swim

**34.** Sertoli cells are regulated by the pituitary hormone known as **[NCERT; CBSE PMT 2006; DPMT 2007]**

**Or**

The hormone which acts on sertoli cells and stimulates the process of spermiogenesis is **[KCET 2015]**
(a) Prolactin (b) LH
(c) FSH (d) GH

**35.** Testes in rabbit are **[MP PMT 1995]**
(a) Inside the body (b) On the sides of the kidneys
(c) In scrotal sacs (d) On either side of dorsal aorta

**36.** Supporting cells found in between the germinal epithelium of testes are called **[MP PMT 1996, 2002; PET (Pharmacy) 2013]**

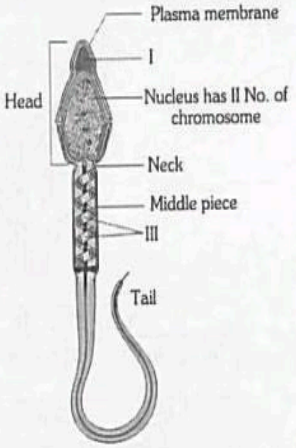
**Or**

Which of the following cells are present in mammalian testes and help to nourish sperms **[AFMC 1997; KCET 2001; CPMT 2003, 09; Kerala CET 2003; Odisha JEE 2012]**
(a) Interstitial cells of Leydig (b) Sertoli cells
(c) Granular cells (d) Phagocytes

**37.** The nutritive medium for the ejaculated sperms is given by
(a) Seminal fluid (b) Vaginal fluid
(c) Uterine lining (d) Fallopian tube

**38.** Cauda epididymis leads to **[MHCET 2004]**
(a) Vas efferens (b) Vas deferens
(c) Ejaculatory duct (d) Rete testis

**39.** The given figure belongs to human sperm. Identify I, II and III respectively **[NCERT]**

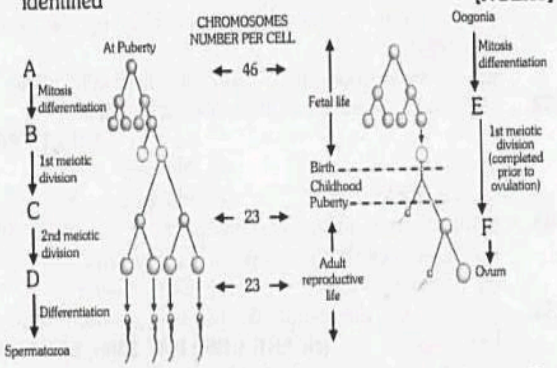



(a) I - Acrosome, II - 23, III - Spirilum
(b) I - Lysosome, II - 23, III - Mitochondria
(c) I - Acrosome, II - 23, III - Mitochondria
(d) I - Acrosome, II - 46, III - Mitochondria

**40.** Cells of leydig are found in **[NCERT; CPMT 1998; MP PMT 2010; Odisha JEE 2012]**
(a) Kidney of rabbit (b) Kidney of frog
(c) Testis of frog (d) Testis of rabbit

**41.** Bidder's canal is found in **[AFMC 1999]**
(a) Testes of frog (b) Kidney of frog
(c) Ovary of mammal (d) Kidney of mammal

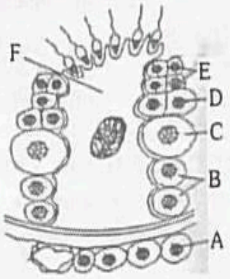
**42.** The given figure refers to spermatogenesis and oogenesis in human. Select the right option in which A to H are correctly identified **[NCERT]**




(a) A - Spermatogonia, B - Primary spermatocytes, C - Secondary spermatocytes, D - Spermatids, E - Primary oocyte, F - Secondary oocyte, G - Second polar body, H - First polar body
(b) A - Spermatogonia, B - Primary spermatocytes, C - Secondary spermatocytes, D - Spermatids, E - Primary oocyte, F - Secondary oocyte, G - First polar body, H - Second polar body
(c) A - Spermatogonia, B - Primary spermatocytes, C - Secondary spermatocytes, D - Spermatids, E - Secondary oocyte, F - Primary oocyte, G - First polar body, H - Second polar body
(d) A - Spermatogonia, B - Secondary spermatocytes, C - Primary spermatocytes, D - Spermatids, E - Primary oocyte, F - Secondary oocyte, G - First polar body, H - Second polar body

**43.** In rabbit, head of the epididymis present at the head of the testis is called **[KCET 2000; CPMT 2000; BHU 2004, 06]**
(a) Vas deferens (b) Cauda epididymis
(c) Gubernaculum (d) Caput epididymis

**44.** The given figure is a portion of a seminiferous tubule. Identify A, B, C, D, E and F respectively **[NCERT]**




(a) A - Leydig cells, B - Spermatogonium, C - Primary spermatocyte, D - Secondary spermatocyte, E - Spermatozoa, F- Sertoli cells
(b) A - Leydig cells, B - Primary spermatocyte, C - Spermatogonium, D - Secondary spermatocyte, E - Spermatids, F- Sertoli cells
(c) A - Sertoli cells, B - Spermatogonium, C - Primary spermatocyte, D - Secondary spermatocyte, E - Spermatids, F- Leydig cells
(d) A - Leydig cells, B - Spermatogonium, C - Primary spermatocyte, D - Secondary spermatocyte, E - Spermatids, F- Sertoli cells

**45.** Phallic organs in cockroach are related to **[BHU 2001]**
(a) Male excretory system
(b) Male reproductive system
(c) Female excretory system
(d) Female reproductive system

**46.** In which of the following organism testes descends into scrotum in breeding season but in non-breeding season goes up **[AFMC 2004]**
(a) Frog (b) Kangaroo
(c) Shrew (d) Bat

**47.** In most mammals, the testes are located in scrotal sa **[MHCET 2003]**
(a) Spermatogenesis
(b) Sex differentiation
(c) More space to visceral organs
(d) Indepndent functioning of kidney

**48.** ICSH acts on **[MHCET 2004]**
(a) Spermatogonia (b) Nurse cells
(c) Leydig cells (d) Primary spermatocytes

**49.** Sertoli cells are found in **[NCERT; CPMT 1994, 99; AFMC 2002, 12; CBSE PMT (Pre.) 2010; J & K CET 2012]**
(a) Pancreas and secrete cholecystokinin
(b) Ovaries and secrete progesterone
(c) Adrenal cortex and secrete and adrenaline
(d) Seminiferous tubules and provide nutrition to germ cells

**50.** What happens during fertilisation in humans after many sperms reach close to the ovum **[NCERT; CBSE PMT (Mains) 2011]**

(a) Cells of corona radiata trap all the sperms except one

(b) Only two sperms nearest the ovum penetrate zona pellucida

(c) Secretions of acrosome helps one sperm enter cytoplasm of ovum through zona pellucida

(d) All sperms except the one nearest to the ovum lose their tails

**51.** If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from **[CBSE PMT (Pre.) 2011]**

(a) Vagina to uterus

(b) Testes to epididymis

(c) Epididymis to vas deferens

(d) Ovary to uterus

**52.** A primary spermatocyte is **[MP PMT 2013]**

(a) Polyploid (b) Haploid

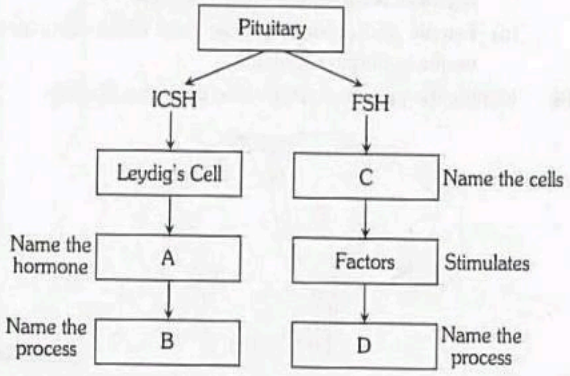
(c) Diploid (d) Aneuploid

**53.** How many spermatids are formed from a secondary spermatocyte **[MP PMT 2013]**

(a) 1 (b) 2

(c) 4 (d) 8

**54.** The figure given below is an incomplete chart showing influence of hormones on gametogenesis in males. Examine the chart carefully and select the appropriate words for the blanks A, B, C and D **[NCERT]**



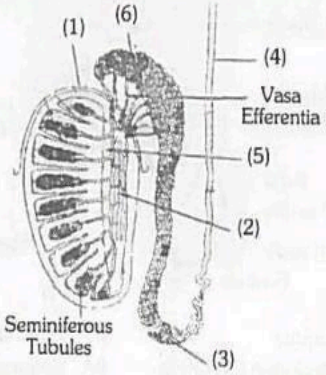

(a) A - Testosterone, B - Spermatogenesis, C - Sertoli cells, D - Spermiogenesis

(b) A - Testosterone, B - Spermiogenesis, C - Sertoli cells, D - Spermatogenesis

(c) A - Testosterone, B - Spermatogenesis, C - Testis, D - Spermiogenesis

(d) A - LH, B - Spermatogenesis, C - Sertoli cells, D – Spermiogenesis

**55.** The following figure refers to L.S. of testis showing various parts. In which option all the six parts 1, 2, 3, 4, 5 and 6 are correctly identified **[NCERT]**



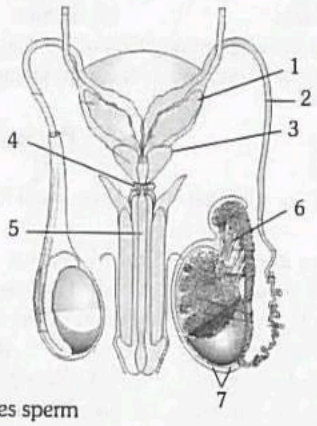

(a) 1- Tunica Vaginalis, 2 - Rete Testis, 3 - Caput Epididymis, 4 - Mediastinum Testis, 5 - Vas Deferens, 6 - Cauda Epididymis

(b) 1- Tunica Vaginalis, 2 - Rete Testis, 3 - Cauda Epididymis, 4 - Vas Deferens, 5 - Mediastinum Testis, 6 - Caput Epididymis

(c) 1- Tunica Vaginalis, 2 - Rete Testis, 3 - Cauda Epididymis, 4 - Mediastinum Testis, 5 - Vas Deferens, 6 - Caput Epididymis

(d) 1- Tunica Vaginalis, 2 - Rete Testis, 3 - Caput Epididymis, 4 - Vas Deferens, 5 - Mediastinum Testis, 6 - Cauda Epididymis

**56.** Match each function given below with the related part or parts of the human male reproductive system shown in th diagram **[NCF**




A. Produces sperm

B. Conducts the sperm through the penis to the outside of the body

C. Produces seminal fluid

D. Connects the epididymis with the urethra

E. Stores sperm

(a) A - 7; B - 5; C - 1, 3, 4; D - 2; E - 6

(b) A - 1, 2; B - 5; C - 3, 4; D - 7; E - 6

(c) A - 7; B - 6; C - 1, 2, 3; D - 5; E - 4

(d) A - 6; B - 5; C - 1, 2, 4; D - 3; E – 7

**3.** Cyclic adenosine monophosphate was discovered by **[DPMT 1993]**

**Or**

caMP mediated 'Cascade model' of enzyme regulation was proposed by

(a) Bekhor *et al* (b) E.W. Sutherland
(c) Beerman (d) Weismann

**4.** Genetic information in a DNA molecule is coded in the **[Odisha JEE 2008]**

(a) No of bases (b) Sequence of nucleotides
(c) Length of DNA (d) Number of nucleosides

**5.** Prokaryotic genetic system has **[RPMT 2005]**

**Or**

The bacterial genome contains **[MP PMT 1996; BHU 2002]**

(a) DNA and histone (b) DNA and no histone
(c) No DNA and histone (d) No DNA and no histone

**6.** The polymerase chain reaction is a technique that **[Odisha JEE 2008]**

(a) Is used for in vivo replication of DNA
(b) Is used for in vivo synthesis of mRNA
(c) Is used for in vitro synthesis of mRNA
(d) Used for in vitro replication of specific DNA sequence using thermostable DNA polymerase

**7.** If an isolated strain of DNA is kept at 82–90° *C*, then **[CPMT 1995]**

(a) It changes into RNA
(b) It divides into one million pieces
(c) No effect
(d) It uncoils into helixes

**8.** Antiparallel strands of a DNA molecule means that **[CBSE PMT 2006]**

(a) The phosphate groups at the start of two DNA strands are in opposite position (pole)
(b) One strand turns clockwise
(c) One strands turns anti-clockwise
(d) The phosphate groups of two DNA strands, at their ends, share the same position

**9.** Which site of a t-RNA molecule hydrogen bonds to a m-RNA molecule **[NCERT; MP PMT 1993, 2002; AMU (Med.) 2006]**

(a) Codon
(b) Anticodon
(c) 5′ end of the t-RNA molecule
(d) 3′ end of the t-RNA molecule

**10.** Nucleotide arrangement in DNA can be seen by **[VITEEE 2008]**

(a) X-ray crystallography (b) Electron microscope
(c) Ultracentrifuge (d) Light microscope

**11.** RNA interference is essential for the **[AIIMS 2012]**

(a) Cell proliferation (b) Cell defence
(c) Cell differentiation (d) Micropropagation

**12.** Who was awarded Nobel Prize for synthesis of RNA in 1959 **[BVP 2003]**

(a) S. Ochoa (b) A. Kornberg
(c) H. Khorana (d) Nirenberg

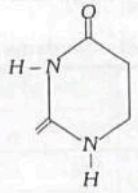
**13.** Break through of the year 2002 **[Kerala CET 2003]**

(a) *c*DNA (b) 16 *S*rRNA
(c) *r*DNA (d) *mi*RNA

**14.** Uridine, present only in RNA is **[Kerala CET 2002; NEET (Karnataka) 2013]**

(a) Nucleoside (b) Nucleotide
(c) Purine (d) Pyrimidine

**15.** Identify this structure



**[KCET**

(a) Adenylic acid (b) Uracil
(c) Cholesterol (d) Adenosine

**16.** Feulgen reaction is a special test for **[MP PMT**

(a) RNA (b) DNA
(c) Protein (d) Carbohydrate

**17.** There is no DNA in **[CBSE PMT 2009]**

(a) An enucleated ovum (b) Mature RBCs
(c) A mature spermatozoan (d) Hair root

**18.** Removal of introns and joining the exons in a defined order in a transcription unit is called **[NCERT; CBSE PMT 2009; Kerala PMT 2010; CBSE PMT (Pre.) 2012]**

(a) Splicing (b) Tailing
(c) Transformation (d) Capping

**19.** Semiconservative model of DNA replication was proposed by which workers in eukaryotes **[NCERT; MP PMT 1993, 94, 96, 97, 99; DPMT 1996; AMU (Med.) 1997; BHU 1997; CPMT 2010]**

(a) Taylor, Woods and Hughes, 1957
(b) Messelson and Stahl, 1957
(c) Nirenberg and Khorana, 1967
(d) Watson and Crick, 1952

**20.** Semiconservative replication of DNA was first demonstrated in **[CBSE PMT 2009]**

(a) *Drosophila melanogaster*
(b) *Escherichia coli*
(c) *Streptococcus pneumoniae*
(d) *Salmonella typhimurium*

**21.** Which one of the following pairs of nitrogenous bases of nucleic acids, is wrongly matched with the category mentioned against it **[CBSE PMT 2008]**

(a) *Guanine, Adenine – Purines*
(b) *Adenine, Thymine – Purines*
(c) *Thymine, Uracil - Pyrimidines*
(d) *Uracil, Cytosine - Pyrimidines*

**22.** Which one of the following is called polynucleotide joining enzyme **[CBSE PMT 2002]**

**Or**

Okazaki fragments are linked by **[J & K CET 2010]**

**Or**

A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant plasmid using **[NEET (Phase-II) 2016]**

(a) Polymerase I (b) Polymerase II
(c) Ligase (d) Ribonuclease

12

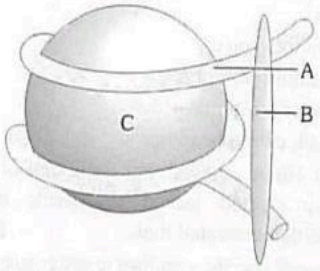
**23.** One turn of the helix in a B-form DNA is approximately **[CBSE PMT 2006]**
(a) 3.4 *nm* (b) 2 *nm*
(c) 20 *nm* (d) 0.34 *nm*

**24.** A–DNA is **[WB JEE 2012]**
(a) Left handed helix with 12 nucleotide pair per turn
(b) Right handed helix with 11 nucleotide pairs per turn
(c) Right handed helix with 12 nucleotide pairs per turn
(d) Left handed helix with 11 nucleotide pairs per turn

**25.** Which form of RNA is most heterogeneous **[Haryana PMT 2005]**
(a) tRNA (b) mRNA
(c) rRNA (d) hnRNA

**26.** The name "mRNA" was given by
(a) Kornberg and Khorana (b) Khorana and Nirenberg
(c) Jacob and Monad (d) Messelson and Stahl

**27.** Study the given figure of Nucleosome (structural unit of chromatin). Identify its componental parts indicated by A, B and C **[NCERT]**




(a) A - DNA, B - Non histone, C - Histone
(b) A - RNA, B - Histone octamer, C - H1 histone
(c) A - DNA, B - H1 histone, C - Histone octamer
(d) A - RNA, B - Non histone, C – Histone

**28.** In the double helix model of DNA, how far is each base pair from the next base pair **[NCERT; Kerala PMT 2006; WB JEE 2010]**
(a) 3.4 nm (b) 0.34 nm
(c) 2.0 nm (d) 34 nm
(e) 0.034 nm

**29.** The nitrogen base found only in DNA is also called **[KCET 2015]**
(a) Uracil (b) 5-methyl uracil
(c) Guanine (d) $NH_4CL$

**30.** 3' AAA TGC GCG ATA 5' is the sequence of nucleotides on a gene; after transcription the mRNA formed against it and the sequence of bases in the corresponding binding anticodons will be **[KCET 2012]**
(a) 5' UUU ACG CGC UAU 3' and 3' AAA–UGC–GCG–AUA 5'
(b) 5' UAU CGC GCA UUU 3' and 3' AUA–GCG–CGU–AAA 5'
(c) 5' UUU ACC TUG UAU 3' and 3' AAA–UGG–UAC–AUA 5'
(d) 5' UAU GUT CCA UUU 3' and 3' AUA–CAU–GGU–AAA 5'

**31.** The enzyme, which helps to cut one strand of *DNA* duplex to release tension of coiling of two strands is **[Kerala PMT 2006; AFMC 2006; WB-JEE 2016]**
(a) *DNA* ligase
(b) *DNA* polymerase *I*
(c) Topo-isomerase
(d) Swielases (helicase or unwindases)

**32.** In the DNA molecule **[CBSE PMT 2008]**
(a) The proportion of Adenine in relation to thymine varies with the organism
(b) There are two strands which run antiparallel-one in 5'→3' direction and other in 3'→5'
(c) The total amount of purine nucleotides and pyrimi nucleotides is not always equal
(d) There are two strands which run parallel in the 5 direction

**33.** Which enzyme is responsible for linking the fragments of DNA **[NCERT; CBSE PMT 1996; Kerala PMT 2005, 09]**

**Or**

The DNA joining enzyme, required in recombinant DNA technology **[WB-JEE 2016]**
(a) DNA polymerase III (b) Endonuclease
(c) DNA polymerase I (d) DNA ligase

**34.** The double helical model of the DNA was proposed by Watson and Crick based on what data produced by Wilkins and Franklin **[Kerala PMT 2011]**
(a) Hybridization (b) DNA sequencing
(c) Southern blotting (d) Fourier's transformation
(e) X-ray diffraction

**35.** DNA polymerase helps in **[CPMT 2003]**
(a) Joining bits of DNA
(b) Splitting or separation of two strands of DNA
(c) Renaturation
(d) Denaturation

**36.** In a 3.2 Kbp long piece of DNA, 820 adenine bases were found. What would be the number of cytosine bases **[KCET 2015]**
(a) 780 (b) 1560
(c) 740 (d) 1480

**37.** Histone occupies the major grooves of DNA at an angle of **[CBSE PMT 2002]**
(a) 15° (b) 90°
(c) 45° to the helix axis (d) 30° to the helix axis

**38.** For transformation, micro-particles coated with DNA to be bombarded with gene gun are made up of **[NCERT; CBSE PMT (Pre.) 2012]**
(a) Silver or Platinum (b) Platinum or Zinc
(c) Silicon or Platinum (d) Gold or Tungsten

**39.** What is antisense technology **[CBSE PMT 2008]**
(a) When a piece of RNA that is complementary in sequence is used to stop expression of a specific gene
(b) RNA polymerase producing DNA
(c) A cell displaying a foreion antigen used for synthesis of antigens
(d) Production of somaclonal variants in tissue cultures

13

**40.** Which one of the following is not applicable to RNA **[AIPMT 2015]**
(a) 5' phosphoryl and 3' hydroxyl ends
(b) Heterocyclic nitrogenous bases
(c) Chargaff's rule
(d) Complementary base pairing

**41.** The prokaryotic enzymes with 5'→3' exonuclease property is/are **[BHU 2012]**
(a) DNA polymerase I (b) DNA polymerase II
(c) DNA polymerase III (d) Both (a) and (c)

**42.** A 340 Å long segment of DNA molecules has 20 thymine nitrogenous bases, what will be the number of guanine nitrogen bases in the same segment **[MHCET 2015]**
(a) 10 (b) 40
(c) 80 (d) 160

**43.** Which one of the following pair is correctly matched **[MP PMT 1993; CBSE PMT 2014]**

| | |
|---|---|
| (a) Frederick Griffith | Discovered the phenomenon of transformation |
| (b) Linus Pauling | Isolated the DNA for the first time |
| (c) Francis Crick | Proposed one gene one polypeptide hypothesis |
| (d) George Beadle | Proposed the concept of inborn errors |

**44.** Chargaff's rule states **[VITEEE 2006, 08; RPMT 2006]**
**Or**
Which one of the following ratio is constant in DNAs of different species **[NCERT]**
(a) A+G = T+C (b) A+T=G+C
(c) A+C = T+C (d) All of the above

**45.** The method developed by Matthew Meselson and Franklin Stahl to separate heavy DNA with $^{15}N$ from DNA with $^{14}N$, for providing evidence for semi-conservative replication of DNA is **[MP PMT 1993; Kerala PMT 2008]**
(a) Ion exchange chromatography
(b) Density gradient centrifugation
(c) Buoyant density centrifugation
(d) Gel filtration
(e) Isopycnic centrifugation

**46.** The haploid content of human DNA is **[Kerala PMT 2008, 11]**
(a) $3.3\times10^9$ *bp* (b) $3.3\times10^9$ *kbp*
(c) $4.6\times10^6$ *bp* (d) 48502 *bp*
(e) $1.65\times10^9$ *bp*

**47.** True replication of DNA is possible due to **[Odisha JEE 2009]**
(a) Hydrogen bonding
(b) Phosphate backbone
(c) Complementary base pairing rule
(d) None of the above

**48.** Replication of DNA is in **[Pb. PMT 1999; MP PMT 2001; Haryana PMT 2005]**
(a) 3' → 5' direction
(b) 2' → 5' direction
(c) Both 3' → 5' and 5' → 3' direction
(d) None of these

**49.** DNA replication is aided by **[NCERT; AFMC 1995; BCECE 2005; MP PMT 2007]**
(a) DNA polymerase only
(b) DNA ligase only
(c) Both DNA polymerase and ligase
(d) RNA polymerase

**50.** If the DNA codons are ATG ATG ATG and a cytosine base is inserted at the beginning, which of the following will result **[NCERT; CBSE PMT 1995]**
(a) A non-sense mutation (b) CA TGA TGA TG
(c) CAT GAT GAT G (d) C ATG ATG ATG

**51.** Melting of DNA at an elevated temperature (70°C) primarily due to the breakdown of **[WB JE']**
(a) Phosphodiester bonds (b) Glycosidic bonds
(c) Disulphide (d) Hydrogen bonds

**52.** The part of DNA molecule that varies among DNA molecule is **[Odisha JEE 2009]**
(a) Phosphate molecule (b) Nitrogen base
(c) Sugar molecule (d) All of these

**53.** Ribozyme is **[BHU 1995]**
(a) RNA without sugar
(b) RNA without phosphate
(c) RNA having enzymic activity
(d) RNA with extra phosphate

**54.** Beadle and Tatum showed that each kind of mutant bread mould they studied lacked a specific enzyme. Their experiments demonstrated that **[DUMET 2009]**
(a) Cells needs specific enzymes in order to function
(b) Genes are made of DNA
(c) Enzymes are required to repair damage
(d) Genes carry information for making proteins

**55.** DNA is methylated at **[Odisha JEE 2005]**
(a) A-residue (b) G-residue
(c) T-residue (d) C-residue

**56.** Purines of DNA are represented by **[CBSE PMT 1996; MP PMT 1999; J & K CET 2002]**
(a) Uracil and thymine (b) Guanine and adenine
(c) Uracil and cytosine (d) Thymine and cytosine

**57.** A nucleoside differs from a nucleotide in not having **[MP PMT 1995, 98; J & K CET 2002; BVP 2002; DUMET 2010]**
(a) Phosphate (b) Sugar
(c) Nitrogen base (d) Phosphate and sugar

**58.** Watson and Crick are known for their discovery that DNA **[MP PMT 1995; EAMCET 1996; BCECE 1996; J & K CET 2002, 10; BVP 2004]**
(a) Is a single stranded helix (b) Contains deoxyribose only
(c) Is a double stranded helix (d) Synthesizes rRNA

**59.** The anti-parallel nature of DNA refers to **[DUMET 2009]**
(a) Its charged phosphate groups
(b) The formation of hydrogen bonds between bases from opposite strands
(c) The opposite direction of the two strands
(d) The pairing of bases on one strand with bases on the other strand

**Q6. Make project on Topic – "Social Responsibility" which must include:**

● Types of social responsibility.
● Role of students within a group.
● Principles of Socially Responsible behaviour

PHYSICAL EDUCATION

File Work

1. Yoga as Preventive Measure for Lifestyle Diseases

1) Obesity

2) Diabetes

3) Asthma

4) Hypertension

5) Back Pain

*Meaning

*List of Preventive Asanas

and Pranayamas are helpful to cure.....

(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, Badminton, Gymnastics 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

3. Make the project on general studies on the topic

"Human Rights"

●The universal declaration of Human Rights and it's significance

●The responsibility of individuals, communities, and business in promoting Human Rights.

●The relationship between Human Rights and sustainable development.

**PAINTING**

1. Make two Landscapes with water colours.

2. Make two compositions with three human figures with water colours.

3. Note= Do your homework on your Ivory sheets or cartridge sheets.

---

**WORK EXPERIENCE**

Prepare a Project on

Visit an Old Age Home and organise the activities for the aged people.

Title of Project file: ***Visit to an Old Age Home.***

---