



# ROYAL COLLEGE OF SCIENCE, NAROWAL

## Home Assignment for Winter Vacation 2023

**Class: 2<sup>nd</sup> Year**

### **Instructions:**

- Attempt all these questions on loose sheets separately for each subject.
- Draw margin lines, use marker / pointer for headings and write in neat handwriting.
- You have to Attempt / Write and Learn all these short questions / topics / sums

### **PHYSICS (Girls)**

#### **Chapter No. 19**

1. What advantages an electron microscope has over an optical microscope?
2. Write down some uses of photocell.
3. If an electron and a proton have the same de Broglie wavelength, which particle has greater speed?
4. The rest mass of photon is zero what can you say about its momentum? Explain briefly.
5. Will bright light eject more electrons from a metal surface than dimmer light of the same colour?
6. What is the Compton shift in the wavelength of a photon scattered at an angle of  $90^\circ$ ?
7. What do you mean by annihilation of matter?
8. The life time of an electron in an excited state is  $10^{-8}$  s. What is its uncertainty in energy during this time?
9. When light shines on a surface, is momentum transferred to the metal surface?
10. Give the two statements of uncertainty principle.
11. Write the relations of length contraction and time dilation in case of special theory of relativity.
12. When does light behave as a wave? When does it behave as a particle?
13. When ultraviolet light falls on certain dyes, visible light is emitted. Why does this not happen when infrared light falls on these dyes?
14. What is condition of pair production?
15. Is it possible for an object to move with speed of light? Justify your answer.
16. Explain NAVSTAR navigation system.
17. Can pair production take place in vacuum? Explain.
18. Does the dilation means that time really passes more slowly in moving system or that it only seems to pass more slowly?
19. Will higher frequency light eject greater number of electrons than low frequency light?
20. If electrons behaved only like particles, what pattern would you expect on the screen after the electrons passes through the double slit?
21. An electron is placed in a box of an atom that is about  $1.0 \times 10^{-10}$  m. What is the velocity of that electron?
22. Does the brightness of a beam of light primarily depends on the frequency of photons or on the number of photons?
23. Write down the postulates of special theory of relativity.
24. If the speed of light were infinite, what would the equations of special theory of relativity reduce to?
25. Photon A has twice the energy of photon B. What is the ratio of the momentum of A to that of B?

## PHYSICS (Boys)

### Chapter No. 17

1. Define the Curie temperature.
2. Define tensile stress and volumetric stress.
3. What are polymeric solids? Give an example.
4. A 1cm diameter cylinder is subjected to a load of 2500gm. Calculate the stress on the bar in megapascals.
5. Define plasticity and UTS.
6. Distinguish between valence and conduction band.
7. Define Young's modulus and bulk modulus.
8. Show that units of modulus of elasticity and stress are the same.
9. What is meant by strain energy? Give its relation.
10. What are the responsibility factors for production of magnetic field in an atom?
11. Define diamagnetic, paramagnetic and ferromagnetic substances. Give their examples.
12. Define superconductors. Give their two uses.
13. Distinguish between intrinsic and extrinsic semi-conductors.
14. Draw the figure showing electrical conduction by holes in a semi-conductor.
15. Distinguish between crystalline and amorphous solids.
16. Define unit cell and crystal lattice.
17. What are ductile and brittle substances? Give an example of each.
18. Define saturation and Remenace of Hystersis loop.
19. Describe energy band picture of semi-conductors.
20. What is difference in elasticity and plasticity?
21. Describe difference between proportional limit and elastic limit.
22. Differentiate between paramagnetic and ferromagnetic substances with examples.
23. Differentiate between insulators and conductors.
24. What is coercivity of magnetic material?
25. What are the two main differences between conductors and semi-conductors?

## CHEMISTRY

### Chapter No. 15

1. What are macronutrients of plants?
2. What are micronutrients of plants?
3. Why prilled urea is more better than a fine powder?
4. Ammonium nitrate is not useful fertilizers for paddy rice, why?
5. Which crops require more potassium fertilizers?
6. Which raw materials are used for cement?
7. Why we call cement as Portland cement?
8. Is cement a mixture or compound?
9. Which process is mostly used for the manufacturing of cement in Pakistan?
10. Write the name of different zones and their temperature in rotary kiln?
11. What are clinkers?

12. Write the names of processes which are used for pulp making?
13. Write the names of woody and non-woody raw materials for pulp making?
14. Which bleaching agents are used to bleach the pulp in Pakistan?
15. What is the role of additives in paper making?
16. What is the role of head box in paper making Fourdrinier machine?
17. What is calendering in paper making?
18. Why nitrogen is important for plants?
19. What do you mean by calcareous material and argillaceous material; used for the manufacturing of cement?
20. What reaction were taking place in the first 24 hour during setting of cement?
21. Define lignin? Write its effect on paper?
22. Why wet cleaning is done in paper manufacture?
23. Explain the importance of potassium fertilizer.
24. Define the term paper.
25. Just write five stage in the manufacturing of Portland Cement?

## COMPUTER

### **Chapter No. 5 + 6 + 7**

1. What is Microsoft Access?
2. What is meant by RDBMS?
3. Define IDE.
4. Write the characteristics of a table.
5. What do you know about degree and cardinality of a relation? Give example.
6. What is the use of datasheet and design view?
7. Why design view is better than table wizard to create a table in MS\_ACCESS?
8. Define OLE.
9. What is the use of Field size property and Default value property?
10. What is the use of validation rule and validation text?
11. Define input Mask property with example.
12. Define referential integrity and its importance.
13. Define cascade update and cascade delete related fields.
14. What is meant by data sorting?
15. Define query and also write down some advantages of query.
16. What do you know SELECT Query?
17. What is Action Query write down its types?
18. Define crosstab and parameter query.
19. What is difference between relationship and join?
20. What are Wild cards?
21. What is a Form and its usage?
22. Differentiate between columnar and Tabular Form.
23. What is datasheet form?
24. Define sub form.

25. Write the methods of creating sub forms.
26. What do you know about checkbox?
27. What is Radio Button?
28. Define conditional formatting.
29. Differentiate between Columnar and Tabular Reports.
30. What is switchboard?

## **BIOLOGY**

### **Chapter No. 19**

1. What is meristem? Describe role of apical and intercalary meristems.
2. Differentiate between Primary and secondary growth.
3. Differentiate between growth and development.
4. What are intercalary meristems? Give their role.
5. What do you mean by lateral meristems? Give their types and role.
6. What is growth correlation? Give example.
7. What is apical dominance? Give its applications.
8. Differentiate between inhibitory and compensatory effects.
9. What is discoidal cleavage?
10. Differentiate between morula and blastula.
11. What is blastoderm and blastocoel?
12. Differentiate between epiblast and hypoblast
13. Differentiate between area opaca and area pellucida.
14. What is primitive streak?
15. What is Henson node?
16. What are somites?
17. Define gray crescent. What role it plays in development?
18. What are morphogenetic determinants?
19. What is embryonic induction?
20. Differentiate between primary organizer and primary induction.
21. What is teratology and teratogens?
22. What are neoblasts?
23. What is aging? Give four symptoms of aging.
24. What are the causes of aging?
25. How we can slow down the process of aging?
26. What is gerontology? Give its goals.

# MATHEMATICS

## Chapter No. 3

Evaluate the following integrals:

1.  $\int_1^{\sqrt{5}} \sqrt{(2t-1)^3} dt$

2.  $\int \frac{e^{m \tan^{-1} x}}{(1+x^2)} dx$

3.  $\int x \cos^2 x dx$

4.  $\int x^3 \ln x dx$

5.  $\int \sin^{-1} x dx$

6.  $\int (\ln x)^2 dx$

7.  $\int \frac{\sqrt{2}}{\sin x + \cos x} dx$

8.  $\int \frac{3x+2}{\sqrt{x}} dx, (x > 0)$

9.  $\int \cos 3x \sin 2x dx$

10.  $\int \frac{\sin x}{1+\cos^2 x} dx$

11.  $\int e^{2x} (-\sin x + 2\cos 2x) dx$

12.  $\int_0^3 \frac{dx}{9+x^2}$

13.  $\int_{-1}^5 |x-3| dx$

14. Find the area between the x-axis and the curve  $y = x^2 + 1$  from  $x = 1$  to  $x = 2$ .

15. Find the area between the x-axis and the curve  $y = \sqrt{2ax - x^2}$ , when  $a > 0$ .

16. Using differentials find  $\frac{dy}{dx}$  and  $\frac{dx}{dy}$  in the following equation  $x^4 + y^2 = xy^2$

17. Check whether the following equation written against the differential equation is its solution

$$x^2(2y+1)\frac{dy}{dx} - 1 = 0, y^2 + y = c - \frac{1}{x}$$

18. Find  $\delta y$  and  $dy$  in the following case:  $y = x^2 - 1$  when  $x$  changes from 3 to 3.02.

19. Solve the following differential equation  $\frac{dy}{dx} = \frac{1-x}{y}$

20. Solve the following differential equation  $\frac{dy}{dx} + \frac{2xy}{2y+1} = x$

## ENGLISH

### • Novel: Chapter No. 7,8

#### Chapter 7

Q.1. What different memories did Mr. Chips have of Katherine during a twilight at Mrs. Wickett?

Q.2. What had Katherine always pleaded with Chips regarding the boys?

Q.3. Who was Ogilvie?

Q.4. How did Chips justify his strict discipline?

## Chapter 8

Q.1. When did Katherine and her new-born child die?

Q.2. What did young Faulkner ask Chips on April 1, 1898?

Q3. What April foolery did fate play with Chips?

### • Translation:

Translation from Urdu to English ( English grammar and composition exercise  
CH #11 [ 19.3] Sample passages 1-5)

### • Essays:

My Favourite Personality

My Hobby

URDU

1- مندرجہ ذیل امدادی فعل کے درست جملے تحریر کیجیے۔

ہونا، چاہنا، پانا، رکھنا، اٹھنا، ڈالنا، کرنا،

2- حرف اور مطابقت کے حوالے سے فقرات کی درست تکمیل کریں۔ ہر حرف کے پانچ جملے بنائیں۔

توں توں، چاہے، اگر، یا، بلکہ، جبکہ، کیونکہ،

3- مندرجہ ذیل عنوانات پر آپ بیتی تحریر کریں۔

پرانے کوٹ کی آپ بیتی، ایک کتاب کی آپ بیتی، ایک پھول کی آپ بیتی،

COMMANDING SUCCESS

1) اپنے دوست کے نام خط لکھیے، جس میں اُس کو بتائیں کہ جسمانی ورزش بیماریوں سے نجات کا ذریعہ ہے۔

2) اخبار کے ایڈیٹر کے نام لوڈ شیڈنگ کے مسئلے کی طرف توجہ مبذول کروانے کے لیے خط لکھیے۔

5- درج ذیل عنوانات پر مضمون تحریر کریں۔

1) منشیات کی روک تھام

2) اقبال کا تصور خودی

3) کسی ایک شخصیت پر مضمون تحریر کریں،

قائد اعظم

شاعر مشرق

ڈاکٹر روتھ فاؤ

عبدالستار ایدھی

## PAK. STUDIES

1	انفارمیشن ٹیکنالوجی سے کیا مراد ہے؟	2	خصوصی افراد کی تعلیم کیا ہوتی ہے؟
3	تعلیم کا مفہوم بیان کریں۔	4	غیر رسمی تعلیم سے کیا مراد ہے؟
5	ثانوی تعلیم کے بارے میں بیان کریں۔	6	رسمی تعلیم اور نیم رسمی تعلیم میں کیا فرق ہے؟
7	پاکستان کے نظام تعلیم کو فرسودہ نظام تعلیم کیوں سمجھا جاتا ہے؟	8	اسلام کا تصور تعلیم اور نظام تعلیم دوسری اقوام سے کس طرح مختلف ہے؟
9	قانون کی تعلیم کے بارے میں آپ کیا جانتے ہیں؟	10	(QAED) کے بارے میں بتائیں۔
11	سپریم ایپلٹ کورٹ کہاں قائم کی گئی ہے؟	12	گلگت بلتستان کونسل کا چیئرمین کون ہوتا ہے؟
13	وفاق کے تمام فرائض کس کے ذریعے سے سرانجام پاتے ہیں؟	14	صوبے اپنے تمام فرائض کس کے نام سے استعمال کرتے ہیں؟
15	پارلیمانی نظام میں صدر کا عہدہ غیر انتظامی کیوں سمجھا جاتا ہے؟	16	1973ء کے آئین کی کس شق کے تحت مقامی حکومتوں کو تحفظ دیا گیا ہے؟
17	صوبائی فرائض کی انجام دہی کے لئے قانون سازی کون سا ادارہ کرتا ہے؟	18	شہریوں کے کوئی سے دو معاشرتی حقوق بیان کریں۔
19	شہریوں کے کوئی سے دو سیاسی حقوق بیان کریں۔	20	معاشی حقوق کے سلسلے میں کوئی قرآنی آیت یا اس کا ترجمہ پیش کریں۔

## TADREES UL QURAN

### سورة الجمعة

- سورة الجمعة کی وجہ تسمیہ لکھیں۔
- سورة الجمعة کا شان نزول تحریر کریں۔
- سورة الجمعة کا مرکزی موضوع لکھیں۔

- سورۃ الجمعہ کا تعارف لکھیں۔
- سورۃ الجمعہ میں کس کی اہمیت بیان ہوئی ہے؟
- سورۃ الجمعہ میں کس کی اور کتنی ذمہ داریاں بیان ہوئی ہیں؟
- سورۃ الجمعہ میں کس غلط موقف کی تردید ہوئی ہے؟
- سورۃ الجمعہ کے آغاز میں کس چیز کا تذکرہ ہے۔

### سورۃ المنافقون

- سورۃ المنافقون کا شان نزول تحریر کریں۔
- حضرت زید بن ارقم نے نبی ﷺ کو کیا بات بتلائی؟
- نبی ﷺ کو جمعہ کے دن کن دو صورتوں کی تلاوت کرتے سنا؟
- سورۃ المنافقون کا مرکزی موضوع لکھیں۔
- منافقین کا کردار تحریر کریں۔
- منافقین کے دلوں پر اللہ تعالیٰ نے مہر کیوں لگائی؟
- منافقین کے لیے نبی ﷺ کو دعائے مغفرت سے کیوں منع کیا گیا؟
- سورۃ المنافقون میں اہل ایمان کو کیا تشبیہ کی گئی ہے؟
- انفاق فی سبیل اللہ کی فضیلت لکھیں۔

### سورۃ التغابن

## COMMANDING SUCCESS

- "التغابن" کا معنی بتائیں؟
- سورۃ التغابن کا تعارف لکھیں۔
- سورۃ التغابن کی وجہ تسمیہ تحریر کریں۔
- "مسبجات" کی فضیلت لکھیں۔
- سورۃ التغابن کا مرکزی موضوع تحریر کریں۔
- سورۃ التغابن میں مسلمانوں کو کیا احکام دیے گئے ہیں؟
- یوم التغابن سے کیا مراد ہے؟
- کفار کو کیا وعید سنائی گئی ہے؟