ROYAL COLLEGE OF SCIENCE, NAROWAL

Home Assignment for Winter Vacation 2023-24
Class: 1st Year (Post Result/New Sections)

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

Chapter No. 1 + 6

1. Name several repetitive phenomena occurring in nature which could serve as reasonable time standards?
2. Give the drawbacks to use the period of a pendulum as a time standard.
3. Why do we find it useful to have two units for the amount of substance, the kilogram and the mole?
4. An old saying is that "A chain is only as strong as its weakest link". What analogous statement can you make regarding experimental data used in a computation?
5. The period of simple pendulum is measured by a stop watch. What types of errors are possible in the time period?
6. Does a dimensional analysis give any information on constant of proportionally that may appear in algebraic expression?
7. Write the dimensions of (i) Pressure (ii) Density
8. Find the dimension of gravitational constant.
9. Write any two drawbacks of dimensional analysis?
10. Define light year. Also find its numerical value in meters, kilometers and petameters?
11. . Differentiate between radian and steradian.
12. The length and the width of the rectangular plate are 15.3 cm and 12.80 cm respectively. Find the area of the plate upto correct significant figures.
13. Show that the equation $s = v_i\, t + \dfrac{1}{2}\, at^2$ is dimensionally correct.
14. Explain what do you understand by the term viscosity?
15. What is meant by the drag force, what are the factors upon which drag force acting upon a small sphere of radius r, moving down through a liquid depend?
16. Why fog droplets appear to be suspended in air?
17. Explain how the swing is produced in a fast moving cricket ball.
18. In an orbiting space station would the blood pressure in major arteries in the leg ever be greater than the blood pressure on major arteries in the neck?
19. Two row boats moving parallel in the same direction are pulled towards each other. Explain.
20. A person is standing near a fast moving train. Is there any danger that he fall towards it?

21. What gauge pressure is required in the city mains for a stream from a fire hose connected to the mains to reach a vertical height of 15 m?
22. A spherical body is dropped into two different fluid its terminal velocity is found to be different. Give the reason
23. What is Venturi's effect?   24. How perfume bottles and paint spray work?
24. How blood pressure is measured?

CHEMISTRY (Girls Campus)

Chapter No. 5

1. Why is it necessary to decrease the pressure in discharge tube?
2. The e/m value of positive rays obtained from hydrogen gas is 1836 times less than that of cathode rays. Justify
3. Cathode rays travel in a straight line. Justify
4. Define slow & Fast moving electrons with chemical equation'
5. Give defects of Rutherford's Model
6. Write two postulates of Plank's Quantum Theory
7. Define the following: (i) frequency (ii) Wave Lenth (iii) Wave No
8. How distance between adjacent orbits for Hydrogen atom go on increasing
9. Why potential energy of bonded electron is negative?
10. How energy of an electron is inversely proportional to n2 but energy of higher orbitals are always greater than those of lower orbits. Briefly discuss.
11. Energy difference between adjacent energy levels goes on decreasing. Discuss
12. Define spectrum. Differentiate between continuous and Line spectrum
13. Differentiate between Atomic Emission and Atomic absorption spectrum
14. What are x-rays? Discuss their origin
15. Give two defects of Bohr's Model. (What is Zeeman's and stark's effect)
16. Define Quantum No & n + l Rule
17. Calculate the mass of electron
18. Relate energy of photon with frequency, wave length & wave No according to Plank's theory
19. Describe the velocity of electrons in the higher orbits are less than those in the lower orbits
20. Discuss the dual nature of matter. The de-Broglie's concept is applicable to microscopic bodies only
21. Define Mosley's Law. Discuss its Importance
22. Define Heisenberg's uncertainty principle. Describe Bohr's model has no relationship with this Principle
23. Define Auf Bau Principle, Pauli's Exclusive Principle & Hund's Rule
24. Write electronic configuration of Cr(24) & Cu (29).
25. Briefly describe Azimuthal Quantum No
26. Discuss briefly Magnetic Quantum No
27. How spin quantum No describe the movement of an electron
28. Describe the points of Mosley's Law
29. Prove that $E = \dfrac{hc}{\lambda}$ 30. Briefly discuss The Principle Quantum Number.

CHEMISTRY   (Boys Campus)

Chapter No. 5 (Upto Bohar's Defects)

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19. Describe the effect of electric field & magnetic field on movement of cathode rays
20. Cathode rays cast shadow. Discuss with diagram
21. How canal rays are produced?
22. Describe briefly the Discovery of neutrons with chemical equation.

COMPUTER

Chapter No. 2 + 3

1. Define computer Network?
2. What is a terminal?
3. How does client-server network work?
4. Distinguish between de-facto and de-jure standards?
5. What is Ring topology?
6. State the purpose of bridge?
7. In which situation gateway is used?
8. Compare LAN and MAN?
9. What is ISDN line?
10. How does CSMA/CD work?
11. What is Ethernet?
12. What is OSI model?
13. Write two purpose of transport layer?
14. What is the purpose of data link layer of the OSI model?
15. what is encryption?

16. What is data communication?
17. Why encoder and decoder are required in data communication?
18. State two characteristics of analog signals?
19. What is ASCII code?
20. Compare simple mode and half-duplex made?
21. How data is transmitted in asynchronous transmission?
22. What is broadband?
23. Define FDM?
24. What is unguided media?
25. What is coaxial cable?
26. How data is transmitted through fiber optic cable?
27. What is communication satellite?
28. How does a modem work?
29. Define demodulation. why it is necessary?
30. Differentiate between internal modem and external modem?

BIOLOGY

Chapter No. 8

1. Define nuclear mitosis.

2. Differentiate between septate and aseptate hyphae.

3. Define hyphae and Mycelium.

4. What do you know about Armillaria?

5. What is Rhizoid? Give its function.

6. What are lichens? Give its examples.

7. What is Haustoria?

8. What is Mychorhizae? Give its types.

9. Enlist different types of asexual reproduction in Fungi?

10. Define karyokinesis and cytokinesis.

11. Give any four land adaptation of fungi.

12. What is Histoplasmosis?

13. Give ecological importance of Fungi.

14. How Fungus is important in respect of nutrition?

15. Give medical importance of Fungus.

16. How Fungus is important in food Industry?

17. Write down imapact of Fungi in Genetic Engineering?

18. Enlist the diseases caused by Fungi in animals.

19. Enlist the diseases caused by Fungi in plants.   20. What is rhodotrula?

MATHEMATICS

Chapter No. 9 + 10 + 12 + 13

Question 01
   i.   Find length l, when $\theta = 65°20'$ and $r = 18mm$

   ii.   Express $75°6'30''$ into radian

   iii.   Find the radius of the circle, in which the arms of a central angle of measure 1 radian cut off an arc of length 35cm.

   iv.   What is the circular measure of the angle between the hands of a watch at 4 O' clock?

Question 02
If $\cot\theta = \frac{15}{8}$ and the terminal arm of the angle is not in 1st quad. Find the values of $\cos\theta$ and $\csc\theta$

Question 03
   i.   Find x, if $\tan^2 45 - \cos^2 60 = x \sin45 \cos45 \tan60$

   ii. $\sin60.\cos30 - \cos60.\sin30 = \sin30$

   iii. $2\sin45 + \frac{1}{2}\csc45 = \frac{3}{\sqrt{2}}$

Question 04
   i. $2\cos^2\theta - 1 = 1 - 2\sin^2\theta$

   ii. $\frac{\sin\theta}{1+\cos\theta} + \cot\theta = \csc\theta$

   iii. $\cot^4\theta + \cot^2\theta = \csc^4\theta - \csc^2\theta$

   iv. $\cos\theta + \tan\theta\sin\theta = \sec\theta$

Question 05
   i. $\sin(180 + \alpha)\sin(90 - \alpha) = -\sin\alpha\cos\alpha$

   ii. $\sin780 \sin480 + \cos120\sin30 = \frac{1}{\sqrt{2}}$

   iii. $\cos(45 + \alpha) = \frac{1}{\sqrt{2}}(\cos\alpha - \sin\alpha)$

Question 06
   i. $\frac{1-\cos\alpha}{\sin\alpha} = \tan\frac{\alpha}{2}$ ii. $\cot\alpha - \tan\alpha = 2\cot2\alpha$

   ii. $2\sin 7\alpha\cos3\alpha$ write as a sum or difference

Question 07
   i.   Solve the right triangle ABC in which $\gamma = 90°$ a = 3.28 b = 5.74

   ii.   A kite flying at the height of 67.2m is attached to a fully stretched string inclined at an angle of 55° to the horizontal. Find he length of the string

   iii.   Find the smallest angle of the triangle ABC when a = 37.34, b = 3.24, c = 35.0

Question 08
   i.   Find area of triangle ABC given c = 32 $\alpha = 47°24'$ $\beta = 70°16'$

   ii.   To prove r = (s-a)$\tan\frac{\alpha}{2}$

   iii.   Prove that abc $(\sin\alpha + \sin\beta + \sin\gamma) = 4\Delta S$

   iv.   Show that R = $\frac{abc}{4\Delta}$ v. Prove that $rr_1r_2r_3 = \Delta^2$

Question 09

i. Find $\cos(\sin^{-1}\frac{1}{\sqrt{2}})$ ii. Show that $\tan^{-1}\frac{5}{12} = \sin^{-1}\frac{5}{13}$

Question 10

i. $show\ that\ \tan(\sin^{-1}) = \frac{x}{\sqrt{1-x^2}}$

ii. Show that $\cos(\sin^{-1}) = \sqrt{1-x^2}$

iii. $show\ that\ \sin^{-1}\frac{1}{\sqrt{5}} + \cot^{-1}3 = \frac{\pi}{4}$

ENGLISH

- **POEMS:** 1, 2

Q1. Explain the following lines with reference to context (poem 2)

> Past cotton-grass and moorland boulder
> Shovelling white steam over her shoulder,
> Snorting noisily as she passes
> Silent miles of wind-bent grasses.

Q2. How do birds and sheep-dogs react as Night Mail approaches? (Poem 2)

Q3. Q.5 What according to the poet, will be the effect of sunshine after the rain? (Poem 1)

- **Lessons: 1, 2**

Q1 What were the reasons Norma gave to her husband to accept the offer?

Q2 Did Norma remain normal on hearing the news of the accident of her husband?

Q3. What were the feelings of the old man at the age of seventy?

Q4. What kind of man was the writer's father?

- **MORAL STORIES**

SLOW AND STEADY WINS THE RACE   GREED IS A CURSE

URDU

تلخیص: نمبر 1 تا 10۔

درخواستیں: فیس معافی، جرمانہ معافی، تبدیلی مضمون۔

مکالمہ جات: تعلیمی نظام، امتحانی نظام، مہنگائی پر۔

رسیدیں: بھینس کی خرید و فروخت کی رسید، پرانے موبائل کی خرید و فروخت کی رسید۔

روزنامچہ: کاروباری شخص کا روزنامچہ۔

روداد / سیرت نگاری: سیرت النبیؐ پر روداد۔

ISLAMYAT

باب نمبر:1

سوال نمبر1۔ عمل اور عقیدہ کی مثال دیں۔

سوال نمبر2۔ عقیدہ تثلیث سے کیا مراد ہے۔

سوال نمبر3۔ رسول اور نبی میں کیا فرق ہے۔

سوال نمبر4۔ انسانی فطرت کا کیا تقاضا ہے؟ قرآن کی روشنی میں دلیل دیں۔

سوال نمبر5۔ صفات میں شرک کا قرآنی رو بیان کریں۔

سوال نمبر6۔ ہم روز مرہ زندگی میں اللہ کی ذات کے ساتھ کس طرح شرک کرتے ہیں۔

سوال نمبر7۔ انسانی زندگی پر عقیدہ توحید کے کوئی سے دو اثرات لکھیں۔

سوال نمبر8۔ وحی متلو اور وحی غیر متلو میں کیا فرق واضح کریں۔

سوال نمبر9۔ رسول کی ضرورت اور اہمیت پر قرآنی دلائل پیش کریں۔

سوال نمبر10۔ معصومیت کس کی خصوصیت ہے؟ وضاحت کریں۔

سوال نمبر11۔ عقیدہ ختم نبوت سے کیا مراد ہے۔

سوال نمبر12۔ نبوت کے چار جھوٹے دعویٰ داروں کے نام لکھیں۔

سوال نمبر13۔ آسمانی کتب کی مشترکہ تعلیمات لکھیں۔

سوال نمبر14۔۔ آسمانی کتب کن پر نازل ہوئیں ان کے نام لکھیں۔

سوال نمبر15۔ عالمگیر کتاب سے کیا مراد ہے۔

سوال نمبر16۔ منکرین آخرت کے شبہات اور ان کا قرآنی رد کا مختصر بیان کریں۔

سوال نمبر17۔ حفاظت قرآن پر قرآنی آیت بمع ترجمہ لکھیں۔

سوال نمبر18۔ وجود باری تعالیٰ کے اثبات میں قرآنی دلائل لکھیں۔

سوال نمبر19۔ قیامت اور آخرت میں کیا فرق ہے؟

سوال نمبر20۔ جہنم کے کوئی سے تین نام لکھیں۔

سوال نمبر21۔ توحید فی الذات اور توحید فی الصفات میں کیا فرق واضح کریں۔

سوال نمبر22۔ مشرکین مکہ کس طرح اللہ کی ذات میں شرک کرتے تھے؟

سوال نمبر23۔ رسالت محمدی کی چند خصوصیات تحریر کریں۔

سوال نمبر24۔ ذٰلِكَ فَضْلُ اللّٰهِ يُؤْتِيْهِ مَنْ يَّشَآءُ کا ترجمہ تحریر کریں۔

سوال نمبر25۔ چار مشہور فرشتے اور ان کی ذمہ داریاں تحریر کریں۔

TARJAMA TUL QURAN

1۔ سورۃ ال عمران کی وجہ تسمیہ بیان کریں۔

2. مباہلہ سے کیا مراد ہے؟

3. سورۃ ال عمران کی فضیلت لکھیں۔

4. وفد نجران کی آمد کا مقصد لکھیں۔

5۔ سورۃ ال عمران میں اہل عقل کی کیا نشانیاں بیان کی گئی ہیں؟

6۔ نجران محمد ﷺ کے ساتھ مباہلہ کرنے کے لئے کون تشریف لے گیا؟

7۔ اہل نجران کو آپ ﷺ نے کن الفاظ میں تشبیہ کی؟

8۔ سورۃ ال عمران کا زمانہ نزول لکھیں۔

9۔ سورۃ ال عمران کا تعارف لکھیں۔

10۔ ترجمہ لکھیں۔ وَتُعِزُّ مَن تَشَاءُ وَتُذِلُّ مَن تَشَاءُ

11۔ سورۃ ال عمران کا مرکزی مضمون کیا ہے؟

12۔ سورۃ ال عمران میں اہل کتاب سے کیا خطاب کیا گیا ہے؟

13۔ سود کی حرمت قرآن مجید کی کس سورۃ میں بیان کی گئی ہے؟

14۔ امر بالمعروف سے کیا مراد ہے؟

15۔ انفاق فی سبیل اللہ سے کیا مراد ہے؟

16۔ دین کی دعوت کا اصول کیا ہے؟

17۔ اہل ایمان کے فرائض بیان کریں۔

18۔ محبت الہی کا حصول کیسے ممکن ہے؟

19۔ امت مسلمہ کو بہترین امت کیوں کہا گیا ہے؟

20۔ ترجمہ لکھیں۔ وَالْكَاظِمِيْنَ الْغَيْظَ وَالْعَافِيْنَ عَنِ النَّاسِ

21۔ عدل کا تقاضا کیا ہے؟

22۔ ہدایت سے محرومی کا سبب کیا ہے؟

23۔ اہل جنت کی نشانیاں لکھیں۔

24۔ ال عمران سے مراد کون لوگ ہیں؟   25۔ دین اسلام کی اہمیت واضح کریں۔