DHANBAD PUBLIC SCHOOL
HOLIDAY ASSIGNMENT (2018-2019)

STD:- XII SC DATE :-

PHYSICS

1. Plot the V-I graph of a metallic wire at two different temperatures and mark the higher temperature curve.
2. Give the relation between the drift velocity and electric field.
3. A cell of emf E and internal resistance r is connected across a variable resistor r .Plot a graph showing the variation of terminal potential V with resistance R.Predict from the graph the condition under which V becomes equal of E.
4. In which respect does a nearly discharged lead acid secondary cell differ mainly from a freshly charged cell in its emf or in its internal resistance?
5. Currents of the order of 0.1A through the human body are fatal. What causes the death: heating of the body due to electric current or something else? Explain.
6. How can you make a potentiometer of given number of wires and length more sensitive using a resistance box.
7. If the emf of the driving cell be decreased what will be the effect on the position of zero deflection in a potentiometer? Explain.
8. In order to quadruple the resistance of a wire of uniform cross section; a fraction of its length was stretched uniformly till the final length of the wire was 1.5 times the initial length. Calculate the value of the fraction elongated..
9. A charged particle q moving in a straight line is accelerated by a potential difference Vita enters a uniform magnetic field B perpendicular to its path .Deduce in terms of V an expression for the radius of the circular path in which it travels.
10. Explain the statement : the energy of a charged particle moving in a uniform magnetic field does not change.
11. Explain the advantages of the null-point method in measuring the resistance in a Wheatstone bridge.
12. Choose the correct alternative(s)
    Heater of an electric kettle is made of a wire of length Land diameter d. It takes 4 minutes to raise the temperature of 0.5 kg water by 40K.This heater is replaced by a new heater having two wires of the same material each of length L and diameter 2d.The way these wires are connected is given in the options. How much time in minutes will it take to raise the temperature of the same amount of water by 40K.
    (a) 4 if wires are in parallel (b)2 if wires are in series (c) 1 if wire are in series (d) 0.5 if wires are in parallel.
13. How can you use a potentiometer to measure the potential drop a cross a resistor in a given circuit?
14. A battery of emf battery of emf ε and internal resistance r gives a current of 0.5A with an external resistor of 12Ω and a current of 0.25A with an external resistor of 25Ω.Calculate (i) internal resistance of the cell and (ii) emf of the cell.
15. In an experiment of calibration of voltmeter, a standard cell of emf 1.1V is balanced against 440 cm of potentiometer wire. The potential difference across the ends of a resistance is found to balance against 220 cm of the wire .The corresponding reading of voltmeter is 0.5Volt.Find the error in the reading of voltmeter.

CHEMISTRY

Q1. Why is Di ethyl ether not used as anaesthetic these days? Write chemical equation.
Q2. Write chemical reaction for the industrial preparation of ethyl alcohol.
Q3. Draw the structre of Asprine & write its one use.
Q4. Explain the following name reaction (a) HBO (b) DIBAL-H (c) HVZ
Q5. Calculate total number of σ & π bonds for (a) Naphthalene (b) Anthracene.
Q6. Explain the following name reaction: - (a) Rosenmund reaction (b) Stephen reaction.
Q7. Write two differences between Aldol condensation & Cannizzaro reaction
Q8. An aromatic hydrocarbon with Molecular Formula C_7H_9N, draw 4 structural isomers.
Q9. Explain the following name reaction:-
    (a) Gattermann-Koch reaction (b) Gattermann reaction (c) Fittig reaction.
Q10. Write the formula of reagent/s for the following, one step conversion:-
    (a) acetyl chloride to acetaldehyde (b) Propyne to Propanone (c) Propene to iso propyl alcohol
Q12. A compound 'X' with MF C_2H_6O on oxidation gives 'Y' $C_2H_4O_2$. The compound 'X' undergoes Haloform reaction. Write the structures of 'X' and 'Y'. Name the product when 'X' is treated with PCC.
Q13. Write IUPAC name (a) Crotonaldehyde (b) Vinyl cyanide (c) Allyl alcohol..

Q14. Give suitable reason:- (a) Alkyl amine is stronger base than ammonia as well as Aniline.
(b) In Kolbe's reaction, o-salicylic acid as a major product.
(c) tertiary alcohol dehydrated faster than secondary as well as primary alcohol.

Q15. Alkyl halide reacts with KCN forms alkyl cyanide while with AgCN forms isocyanides as major products, why?

Q16. Arrange in decreasing order as indicated
(a) acetaldehyde, formaldehyde, acetophenone, acetone :-reactivity towards HCN
(b) o-cresol, phenol, picric acid, o-nitro phenol :-acidic strength
(c) methyl alcohol, Sodium formate, formic acid, ethane:-solubility in water.

Q17. Write detailed mechanism of Aldol reaction.

Q18. Convert for the following not more than 2 steps: - (a) phenol to nitro benzene
(b) Benzaldehyde to benzyl chloride (c) nitro benzene to phenyl iso cyanide
(d) Methyl chloride to acetic acid (e) acetaldehyde to crotonaldehyde.

Q19. How can you distinguish between following pair of organic compounds, Write chemical reaction also: - (a) ethyl amine & aniline (b) phenol & aniline
(c) Methyl alcohol & ethyl alcohol (d) acetaldehyde & acetone (e) ethene & Ethyne.

Q20. How can you prepare following organic compounds commercially(with chemical reaction):-
(a) Ethyl alcohol (b) phenol

MATHS (ASSIGNMENT ON CONTINUITY AND DIFFERENTIABILITY)

1 Differentiate $\tan^{-1}\frac{e^{2x}+1}{e^{2x}-1}$ w. r. to x .

2 Differentiate $\tan^{-1}\frac{2x}{1+15x^2}$ w. r. to x.

3 If $\sec^{-1}\frac{x+1}{x-1}+\sin^{-1}\frac{x-1}{x+1}$, show that $\frac{dy}{dx}=0$.

4 If $y=a^{x^{a^{x^{\ldots\ldots\infty}}}}$, $prove\ that\ \frac{dy}{dx}=\frac{y^2(logy)}{x[1-y(logx)(logy)]}$

5. Find the relationship between *a* and *b* so that the function *f* defined by $f(x)=\begin{cases}ax+1, if\ x\le 3\\ bx+3, if\ x>3\end{cases}$ is continuous at *x=3*.

6 . Show that the function defined by g(x) = x-[x] is discontinuous at all integral points.

7 Determine it f defined by $f(x)=\begin{cases}x^2 sin\frac{1}{x}, if\ x\neq 0\\ 0\ ,\ if\ x=0\end{cases}$ is continuous function ?

8. For what value of λ the function defined by $f(x)=\begin{cases}\lambda(x^2-2x), if\ x\le 0\\ 4x+1, if\ x>0\end{cases}$ Continuous at *x=0*? What about continuity at *x=1*?

9. Test the differentiability of the function $f(x)=x^2$ at *x=1* and find *f'(1)*.

10. Prove that the function *f* given by $f(x)=|x-1|$, $x\epsilon R$ is not differentiable at *x=1*.

11 . Find $\frac{dy}{dx} if\ y^x+x^y+x^x=a^b$

12. Find $\frac{dy}{dx} if\ y=x^{Sinx}+(Sinx)^{Cosx}$

13 . Differentiate with respect to *x* $\sqrt{\frac{(x-1(x-2)}{(x-3)(x-4)(x-5)}}$

14. Find: $\frac{dy}{dx}\ if\ x=\frac{Sin^3t}{\sqrt{Cos2t}}, y=\frac{Cos^3t}{\sqrt{Cos2t}}$

15. If $x=\sqrt{a^{Sin^{-1}t}}, y=\sqrt{a^{Cos^{-1}t}}$, $Show\ that\ \frac{dy}{dx}=-\frac{y}{x}$

16. If $x=a\left(Cost+logtan\frac{t}{2}\right), y=aSint, find\ \frac{dy}{dx}$

17. If $y=Cos^{-1}x, Find\ \frac{d^2y}{dx^2}$ in terms of *y* alone.

18. If $y=(tan^{-1}x)^2, show\ that\ (x^2+1)^2y_2+2x(x^2+1)y,=2$

19. If $x\sqrt{1+y}+y\sqrt{1+x}=0, for-1<x<1, prove\ that\ \frac{dy}{dx}=-\frac{1}{(1+x)^2}$

20 . If $(x-a)^2+(y-b)^2=c^2$, for c>0, prove that $\frac{\left[1+\left(\frac{dy^2}{dx}\right)\right]^{\frac{3}{2}}}{\frac{d^2y}{dx^2}}$ is a constant independent of *a* and *b*.

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BIOLOGY

Q.1 What is meant by genotype and phenotype?
Q.2 Why ,in a test cross ,did Mendel cross a tall pea plant with a dwarf pea plant only?
Q.3 Why is it that the father never passes on the gene for haemophilia to his sons?
Q.4 Who rediscovered Mendel's laws of heredity?
Q.5 What are pleiotropic genes?
Q.6 What is meant by non disjunction of chromosomes?
Q.7 Write the differences between Down' syndrome and Turner's syndrome?
Q.8 Why did Mendel choose pea plant for his experiments?
Q.9 Work out a cross to find the genotype of a tall pea plant .
Q.10 Why are grasshopper and Drossophila said to show male heterogamety? Explain.
Q.11 What is meant by pedigree analysis ? What are the symbols used in pedigree ?
Q.12 Explain haplo-diploidy in honey bees .
Q.13 Why did Mendel's work remain unnoticed for such a long time.
Q.14 Define Mutation.
Q.15 Explain the mechanism of inheritance involved in starch synthesis and grain size in pea.

ENGLISH

1. Read and write the book review of the novel – 'The Invisible Man '.
2. Write any one of the following for AVALOKAN, the School Magazine.
   Article, travelogue,poem, biographical and autobiographical sketches etc.

HINDI

प्र0 01 जनसंचार माध्यम में निम्न प्रश्नों को लिखें तथा याद करें–

(क) प्रिंट माध्यम से आप क्या समझते हैं? (ख) भारत में पहला छापाखाना कहाँ खुला?

(ग) डेड लाइन किसे कहते हैं? (घ) फोन–इन किसे कहते हैं?

(ड) एंकर बाइट से आप क्या समझते हैं? (च) इंटरनेट की लोकप्रियता का कारण क्या है?

(छ) भारत में छपनेवाला पहला अखबार कौन–साथा?यह कब और कहाँ प्रकाशित हुआ?

(ज) ब्रेकिंग न्यूज क्या है?

(झ) पत्रकारिता किसे कहते हैं?

(ञ) हिन्दी का पहला साप्ताहिक पत्र कौन–सा था? इसके संपादक कौन थे?

प्र0 02 'एक अच्छा स्कूल' – इस पर एक आलेख लिखें।

प्र0 03 (क) भक्तिन का जीवन सदैव दुखों से भरा रहा– स्पष्ट कीजिए।

(ख) बाजार के जादू को क्या कहा गया है? आपके विचार से यह कितना सही है?

(ग) 'गगरी फूटी बैल पियासा' का भाव देश के संदर्भ में समझाइए।

(घ) शरद ऋतु के आगमन के प्रति कवि की कल्पना अनूठी है, पतंग पाठ के आधार पर स्पष्ट कीजिए।

प्र0 04'सिल्वर वैडिंग' कहानी की समीक्षा अपने शब्दों में लिखिए।

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