John Wesley Convent, Rohtak

Summer Vacation Home Work (2021-22)

Class : XII

Hurrah! Break Time……

General Instructions:

- Do your holidays homework in a very neat and tidy manner.

English:

1. Prepare a Writing Skill File. Use coloured A4 size sheets.
   a) Content page
   b) Notice (two samples)
   c) Classified advertisements –Write or cut and paste (different categories from magazine or newspaper)
   d) Invitations (different types)
   e) Letter to Editor (cut and paste or write)
2. Revise the following for class test :
   Lesson 1,2,3,4 (Flamingo).
   Poem 1,2, 3.
   Lesson 2,4,5(Vistas).
3. Write an article on the topic: How Google controls the life of an average person?
4. Are virtual classes as effective as traditional and on campus schooling? Write a debate in favour or against the motion.
5. Draft a poster on 'FIGHT CORONAVIRUS'.

Maths:

1. Revise the following Chapters :
   a) Relation and Function
   b) Inverse Trigonometric Function
   c) Matrices
   d) Determinants
2. Complete the given assignments of these chapter.
3. Project File work :
   Do the following projects in your project file
   a) To verify that if L be the set of all lines in a plane and R is a relation defined on L by R = { (l,m) : l is perpendicular to m}
   b) To verify that the relation R on the set L of all lines in a plane defined by R = { (l,m) : l || m} is an equivalent relation
   c) To represent the following functions :
      (I) One one function
      (II) Many one function
      (III) Into function
      (IV) Onto function
   d) To draw the graph of $\sin^1 x$, using the graph of sin x .

   To find principal value of function $y = \sin^1 x$ using a unit circle.

Physics:

1. Revise 2nd unit (Current Electricity) and Prepare Practical file.

Chemistry:

1. Revise and practices numericals and previous year board questions of
   a) Electrochemistry.
   b) Chemical Kinetics.
   c) Surface Chemistry.

2. Project report on "Dying of Fabrics" and "Medicines and Drugs".

Biology:

1. Make “Investigatory Project” (spiral binding) with the following heads in it.
   - First page – Topic, Submitted to/Submitted by
   - Certificate
   - Acknowledgement
   - Content
   - Introduction
   - Theory
   - Observation
   - Conclusion
   - Bibliography
2. Solve UT and given worksheets in your fair notebook.
3. Draw well labeled diagrams from chapters till done in the in your fair notebook.
4. Draw mind maps for the following :
   i). Game to genesis in angiosperms
   ii). Game to genesis in humans
5. Complete notes of all the chapters done .
   *Reproduction in organisms
   *Reproduction in flowering plants
   *Reproduction in human beings
   *Reproductive health
   *Principles of inheritance
6. Prepare Practical file.

Accountancy:

1. Revise Chapter- 1 and Chapter-2 of Partnership Accounts for class test.
2. Do additional questions of Chapter-1 in your notebook.
3. Prepare Project File of topic and sample alloted to you according to your roll no in group.

Business Studies:

1. Revise units-Nature and Significance of Management, Principles of Management Planning and Organising for class test.
2. Do case studies from NCERT in your note book of all units.
3. Prepare project file on the topics and samples allotted to you according to your roll no’s in your class group.

Economics:

1. Revise syllabus done till the date :
   Micro economics
   Chapter- 2 to 11
2. Prepare Project File on the allotted topic.
   Topics for Project File:
   a) RBI & its Functions
   b) Government Budget
   c) Balance of Payment
   d) Small Scale Industries
   e) Demoneytisation
   f) GST

Geography:

1. Revise and prepare notes
   Book -Fundamentals of Human Geography
   Ch 1 Human Geography

Ch 2 The World Population
Ch 3 Population Composition
Ch 4 Human Development
Book India people and economy
Ch 1 Population
Ch 2 Mmigration
Ch 3 Human Development
Ch 4 Land Resources and Agriculture
Ch 5 Water Resources

2. Prepare practical file.

Political Science:

1. Read and revise the chapters taught in the class. Answer the questions sent through the worksheet in Google Classroom.

   Book-Contemporary World Politics

   Chapter 1 - The Cold War Era.
   Chapter 2 - Era of one Party Dominance.
   Chapter 3 - The End of Bipolarity.

   Book-Politics In India Since Independence

   Chapter 1 : Challenges of Nation Building
   Chapter 2 : Era of One-Party Dominance

   In addition, prepare assignment from the chapters mentioned above with the following details:

   1. 15 Terms
   2. 20 MCQs
   3. 20 Very short answer type questions
   4. 20 fill in the blanks.

2. Political Science Project- Prepare a project according to CBSE guidelines.
   Some suggested topics are:

   1. The recent Lok Sabha Elections 2019 were hotly contested. Many parties were in the fray and the results have been declared. Analyse this election and submit a project report by answering the following:

   a) Analyze the importance of elections in a democratic country.
   b) Name of the parties contesting and their alliances along with their symbols.
   c) Slogans used and highlights of their campaigns
   d) The controversial and contentious issues that have been a part of the elections.
   e) Analysis of result with help of pie chart.

   Any of these points (a-e) can be used a separate project while analyzing all Loksabha elections of the country so far.

Hindi:

1. हिंदी भाषा के शब्द भंडार का ज्ञान बढ़ाने हेतु प्रतिदिन समाचार पत्र और पत्र पत्रिकाएं पढ़िए।
2. निम्नलिखित विषयों में से किसी एक विषय पर एक अतिउत्तम कला समकेतिक–Art integrated परियोजना बनाएं।
   धर्मवीर भारती / महादेवी वर्मा / गोस्वामी तुलसीदास
   क) धर्मवीर भारती (जीवन परिचय जन्म शिक्षा, रचनाएं सम्मान व पुरस्कार, काव्य सौंदर्य, भाषा शैली आदि)
   ख) महादेवी वर्मा (जीवन परिचय जन्म शिक्षा, रचनाएं पुरस्कार व सम्मान काव्य व भाव सौंदर्य, भाषा शैली आदि)
   ग) गोस्वामी तुलसीदास (जीवन परिचय जन्म शिक्षा, रचनाएं पुरस्कार व सम्मान काव्य व भाव सौंदर्य, भाषा शैली आदि)
3. अभी तक हो चुके पाठ्यक्रम –
   पाठ 1 दिन जल्दी जल्दी ढलता है
   पाठ 12 बाजार दर्शन
   पाठ 13 काले मेघा पानी दे
   वितान पाठ 1 सिल्वर वेडिंग
   अभिव्यक्ति माध्यम पाठ 1, 2, 3 को दोहराए व उत्तर पुस्तिका में पूर्ण कीजिए।

4. रचनात्मक लेखन कार्य –
   अनुच्छेद
   कार्यालय पत्र
   फीचर लेखन
   आलेख लेखन A3 sheet पर लिखिए।

Music: Prepare Project File.

Topics are -

1. **जीवनी- फैयाज खान, अब्दुल करीम खान, बड़े गुलाम अली खान, पंडित कृष्णराव शंकर**
2. **राग- राग भैरव, राग बागेश्री**
3. **ताल- झप ताल , रूपक ताल**
4. **तानपुरा with picture and label that.**
   Use A3 sheets only. You need 14 pages.(2 extra). All the written work should be on right hand side and picture is to be pasted on left hand side. Don't forget to write an aknowledgement and certificate.
5. **Learn defination- अलंकार, मींड, गमक, ग्राम, मूर्च्छना, कण, मुर्की खटका, मार्गी संगीत व देशी संगीत**

Physical Education:

1. Prepare your practical file
2. Topic. Athletics (Draw pictures)
   * 400m track
   *Jump event
   (Long Jump, High Jump, Triple Jump).
   * Throw Event
   (Discuss Throw, Shot Put, Javelin Throw)
3. Learn questions answers of chapter-1,4 and 5.

Psychology:

1. Watch **at least two** of the following movies based on psychological themes and ***write reviews based on psychological themes*** :
   - Character sketch of the protagonist (main character).
   - What are the various problems encountered by the protagonist and how were they resolved.
   - Reflecton the relationships the protagonist shared with other characters.
   - Your learnings from the movie
   - Discuss your favourite part of the movie giving reasons.
   - Your criticism/ opinion/ comments suggestions/ feedback about the movie (negative or positive).
2. **The list of movies:**
   a) Life of a Pie
   b) English Vinglish
   c) Theory of Everything
   d) Pursuit of Happiness
   e) A Beautiful Mind
   f) A Few Good Men
   g) Bend it Like Beckham
   h) Queen
   i) Highway
   j) I Am Kalam

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Summer Vacation Assignments-Maths / Class..12.. Section.....

Name: _____ Roll No.:_____ Topic : _____

CHAPTER 2

INVERSE TRIGONOMETRIC FUNCTIONS

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. Write the principal value of

(i) $\sin^{-1}(-\sqrt{3}/2)$ (ii) $\cos^{-1}(\sqrt{3}/2)$.

(iii) $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$ (iv) $\text{cosec}^{-1}(-2)$.

(v) $\cot^{-1}\left(\frac{1}{\sqrt{3}}\right)$. (vi) $\sec^{-1}(-2)$.

(vii) $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right) + \cos^{-1}\left(\frac{-1}{2}\right) + \tan^{-1}(-\sqrt{3})$

2. What is value of the following functions (using principal value).

(i) $\tan^{-1}\left(\frac{1}{\sqrt{3}}\right) - \sec^{-1}\left(\frac{2}{\sqrt{3}}\right)$. (ii) $\sin^{-1}\left(-\frac{1}{2}\right) - \cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$.

(iii) $\tan^{-1}(1) - \cot^{-1}(-1)$. (iv) $\text{cosec}^{-1}(\sqrt{2}) + \sec^{-1}(\sqrt{2})$.

(v) $\tan^{-1}(1) + \cot^{-1}(1) + \sin^{-1}(1)$.

(vi) $\sin^{-1}\left(\sin\frac{4\pi}{5}\right)$. (vii) $\tan^{-1}\left(\tan\frac{5\pi}{6}\right)$.

(viii) $\text{cosec}^{-1}\left(\text{cosec}\frac{3\pi}{4}\right)$.

SHORT ANSWER TYPE QUESTIONS (4 MARKS)

3. Show that $\tan^{-1}\left(\frac{\sqrt{1+\cos x}+\sqrt{1-\cos x}}{\sqrt{1+\cos x}-\sqrt{1-\cos x}}\right) = \frac{\pi}{4} + \frac{x}{2}$, $x \in [0, \pi]$

4. Prove

$$\tan^{-1}\left(\frac{\cos x}{1-\sin x}\right) - \cot^{-1}\left(\sqrt{\frac{1+\cos x}{1-\cos x}}\right) = \frac{\pi}{4} \qquad x \in (0, \pi/2).$$

5. Prove $\tan^{-1}\left(\frac{x}{\sqrt{a^2-x^2}}\right) = \sin^{-1}\frac{x}{a} = \cos^{-1}\left(\frac{\sqrt{a^2-x^2}}{a}\right)$.

6. Prove

$$\cot^{-1}\left[2\tan\left(\cos^{-1}\frac{8}{17}\right)\right] + \tan^{-1}\left[2\tan\left(\sin^{-1}\frac{8}{17}\right)\right] = \tan^{-1}\left(\frac{300}{161}\right).$$

7. Prove $\tan^{-1}\left(\frac{\sqrt{1+x^2}+\sqrt{1-x^2}}{\sqrt{1+x^2}-\sqrt{1-x^2}}\right) = \frac{\pi}{4} + \frac{1}{2}\cos^{-1}x^2$.

8. Solve $\cot^{-1}2x + \cot^{-1}3x = \frac{\pi}{4}$.

9. Prove that $\tan^{-1}\left(\frac{m}{n}\right) - \tan^{-1}\left(\frac{m-n}{m+n}\right) = \frac{\pi}{4}, m, n > 0$

10. Prove that $\tan\left[\frac{1}{2}\sin^{-1}\left(\frac{2x}{1+x^2}\right) + \frac{1}{2}\cos^{-1}\left(\frac{1-y^2}{1+y^2}\right)\right] = \frac{x+y}{1-xy}$

11. Solve for x, $\cos^{-1}\left(\frac{x^2-1}{x^2+1}\right) + \frac{1}{2}\tan^{-1}\left(\frac{-2x}{1-x^2}\right) = \frac{2\pi}{3}$

12. Prove that $\tan^{-1}\frac{1}{3} + \tan^{-1}\frac{1}{5} + \tan^{-1}\frac{1}{7} + \tan^{-1}\frac{1}{8} = \frac{\pi}{4}$

13. Solve for x, $\tan(\cos^{-1}x) = \sin(\tan^{-1}2)$; $x > 0$

14. Prove that $2\tan^{-1}\left(\frac{1}{5}\right) + \tan^{-1}\left(\frac{1}{4}\right) = \tan^{-1}\left(\frac{32}{43}\right)$

15. Evaluate $\tan\left[\frac{1}{2}\cos^{-1}\left(\frac{3}{\sqrt{11}}\right)\right]$

16. Prove that $\tan^{-1}\left(\frac{a\cos x - b\sin x}{b\cos x + a\sin x}\right) = \tan^{-1}\left(\frac{a}{b}\right) - x$

17. Prove that

$$\cot\left\{\tan^{-1}x + \tan^{-1}\left(\frac{1}{x}\right)\right\} + \cos^{-1}(1-2x^2) + \cos^{-1}(2x^2-1) = \pi,\ x > 0$$

18. Prove that $\tan^{-1}\left(\frac{a-b}{1+ab}\right) + \tan^{-1}\left(\frac{b-c}{1+bc}\right) + \tan^{-1}\left(\frac{c-a}{1+ca}\right) = 0$ where a, b, $c > 0$

19. Solve for x, $2\tan^{-1}(\cos x) = \tan^{-1}(2\ \text{cosec}\ x)$

20. Express $\sin^{-1}\left(x\sqrt{1-x} - \sqrt{x}\sqrt{1-x^2}\right)$ in simplest form.

21. If $\tan^{-1}a + \tan^{-1}b + \tan^{-1}c = \pi$, then

prove that $a + b + c = abc$

22. If $\sin^{-1}x > \cos^{-1}x$, then x belongs to which interval?

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Summer Vacation Assignments-Maths / Class..12.. Section.....

Name: _____ Roll No.:_____ Topic : _____

TOPIC – CONTINUITY & DIFFERENTIATE

1. Find the point of discontinuity for the function f(x) = $\begin{cases} \frac{x^4 - 16}{x - 2} & x \neq \end{cases}$

2. Show that f(x) = 5x-4 $\begin{cases} & a < x < 1 \text{ is continuous at } x = 1 \\ 4x^3 - 3x & 1 < x < 2 \end{cases}$

3. For what value of K in the for continuous x = 0, f(x) $\frac{1 - \cos 4x}{8x^2}$ $x \neq 0$

4. If fx f(x) = $\begin{cases} 3ax+b & \text{if } x > 1 \\ 11 & \text{if } x = 1 \end{cases}$ $5ax - 2b$ if $x < 1$ is continuous at x = 1. find a, b

5. If f(x) is differentiable at x = a find line $x \to \alpha$, $\frac{x^2 f(a) - a^2 f(x)}{x - a}$

6. Find values of 680 that fx given by f(x) $\begin{cases} 1 & : f\, x \leq 3 \\ ax+b & 3<x<5 \\ 7 \text{ if} & x \leq 5 \end{cases}$

7. If $y = -\cot^2 \frac{x}{2} - x$ by $\sin \frac{x}{2}$, prove : $\frac{dy}{dx} : \cot 3 \frac{x}{2}$

8. If x = Cos θ+ θsin θ, y = sin θ– θcosθ, prove $\frac{d^2y}{dx^2} = \frac{\sec^2 \theta}{\theta}$

9. If $y = \frac{2 - 3\cos x}{\sin x}$, find $\frac{dy}{dx}$ at $x = \frac{\Pi}{6}$

10. If y = 10g (1 + cos x), Prove $\frac{d^3y}{dx^3} + \frac{d^2y}{x} \cdot \frac{dy}{dx} = 0$

11. If $y = \tan^{-1} \frac{\sqrt{a^2 + x^2} + \sqrt{a^2 - x^2}}{\sqrt{a^2 + x^2} - \sqrt{a^2 - x^2}}$ show that $\frac{dy}{dx} = \frac{-2a^2}{x^3} 1 \left(+ \frac{a^2}{\sqrt{a^4 - x^4}} \right)$

12. If $Y = \sqrt{\frac{1 + e^x}{1 - e^x}}$, then show that $\frac{dy}{dx} = \frac{e^x}{(1 - e^x)\sqrt{1 - e^{2x}}}$

13. If $y = \sin^{-1} [\, x \sqrt{1 - x} - \sqrt{x} \sqrt{1 - x^2}$ find $\frac{dy}{dx}$

14 If $y = \text{Sin}^{-1} \left(\frac{x^2 - y^2}{x^2 + y^2} \right) = \tan^{-1} a$, prove : $\frac{dy}{dx} = \frac{y}{x}$

15. If $e^y = y^x$, prove $\frac{dy}{dx} = \frac{(\log\ y)^2}{\log\ y - 1}$

16. If x = a (cost + log tan t/2), y = sin t then find $\frac{dy}{dx} at\ t = \frac{\pi}{4}$

17. Differentiate $e^{\sin x} + (anx)^x$ w.r.t. x.

18. If $y = e^x$ (Sin + cos x) Prove : $\frac{d^2y}{dx^2} - \frac{2dy}{dx} + 2y = 0$

19. If x = 3 sin t – sin 3t, y = 3 cost - cos 3 t find $\frac{d^2y}{dx^2}$ at t =

20. Find dy if (i) $x = a\ 1 + t^2$, $y = 2t$ (ii) $x = 1 + 10gt$, $y = 2 \sin$

21. Find $\frac{dy}{dx}$,if (i) $x = a\ \frac{(1+t^2)}{1-t^2}$, $y = \frac{2t}{1-t^2}$, (ii) $x = \frac{1+\log t}{E^2}$, $y = 2\sin - \sin^2$ (iii) $x^y = y^x$

22. If $e^y (x + 1) = 1$, Prove that $\frac{dy}{dx} = \left(\frac{dy}{dx}\right)^2$

23. If $x^4 = c^{x-y}$, then prove that $\frac{dy}{dx} = \frac{\log x}{\log(ex)^2}$

24. If Sin (x, y) = $x^2 - y$, find $\frac{dy}{dx}$

25. If $e^x + e^y = e^{x+y}$ prove that $\frac{dy}{dx} = e^{y-x}$

26. Find $\frac{dy}{dx}$ if cos (x + y) = y sin a.

27. If $x\ \sqrt{1} + y = y\ .\ \sqrt{1+x} = 0$ then prove that $\frac{dy}{dx} = \frac{-1}{\sqrt{1+x^2}}$

28. If $x\ \sqrt{1-y^2} + y\ \sqrt{1-x^2} = 1$, then prove $\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}$

29. If $y = x\ (a + y)$ show : $\frac{dy}{dx} = \frac{Sin^2(a+y)}{\sin a}$

30 .If $\sqrt{1-x^2} + \sqrt{1-y^2} = a\ (x - y)$, prove $\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}$