



### CLASS-XII

#### (ENGLISH)

1. Students have to answer the **Both** assignments compulsorily & as regards to project work, they will have to do **1.Student's profile and COMPARATIVE ANALYSIS OF CHARACTERS** in pairs of the chapters of both classes xi & xii.

#### 2.Completion of Assignments.

The students have to write in channel files starting with

#### Topic:1

#### PROJECT WORK

#### Student's profile

Details of the student's intro-

Their strengths & weaknesses-

Their likes & dislikes including their role models-

Their destinations & their strategies to reach them-

#### COMPARATIVE ANALYSIS OF THE CHARACTERS OF THE CHAPTERS

**( students are required to paste images of the writers & poets of the respective chapters)**

1 Raj Kumar Shukla & William Douglas

2 Charlie & Sophie

3 Franz & Taplow

4 M.Hamel & Crocker Harris

5 Melon King & Tiger King

6 Shirley Touslon & Kamla Das

7 Mrs Fitzgerald & Aunt Jennifer.

#### ASSIGNMENT

1. Debate on Contemporary Issues in Literature

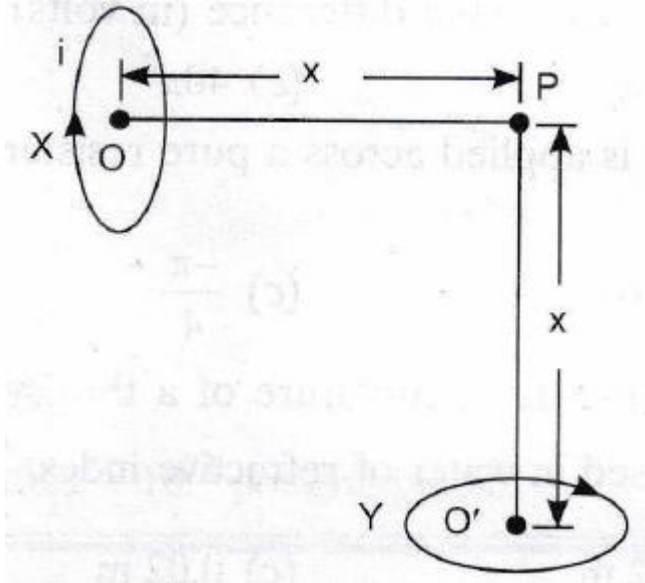
Objective: Host a debate on a topic like "Are E-books Better than Print Books?" or "Should Literature Be Censored?"

2. Impact of Social Media on Youth Mental Health: Investigate the positive and negative impacts of social media on teenagers' mental health.

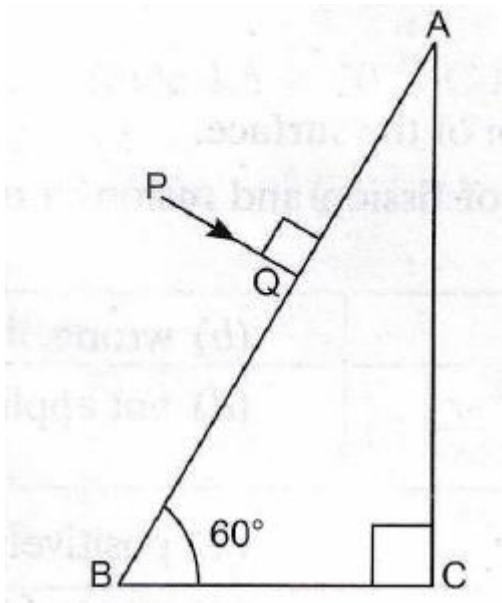
## PHYSICS

➤ Write the answers of the following questions.

1. Two identical circular loops X and Y of radius R and carrying the same current are kept in perpendicular planes such that they have a common centre at P as shown in the figure. Find the magnitude and direction of the net magnetic field at the point P due to the loops.

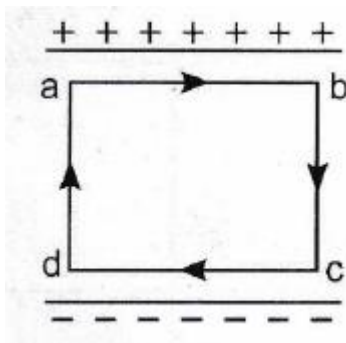


2. Prove that the average energy density of the oscillating electric field is equal to that of the oscillating magnetic field.
3. A ray PQ incident normally on the refracting face BA is refracted in the prism BAC made of material of refractive index 1.5. Complete the path of ray through the prism. From which face will the ray emerge? Justify, your answer.

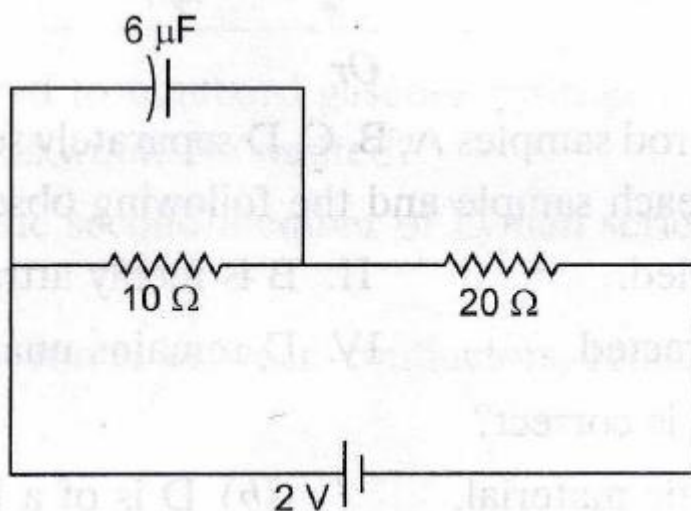


4. Find the intensity at a point on a screen in Young's double slit experiment where the interfering waves of equal intensity have a path difference of  
(i)  $\lambda/4$ , and (ii)  $\lambda/3$ .

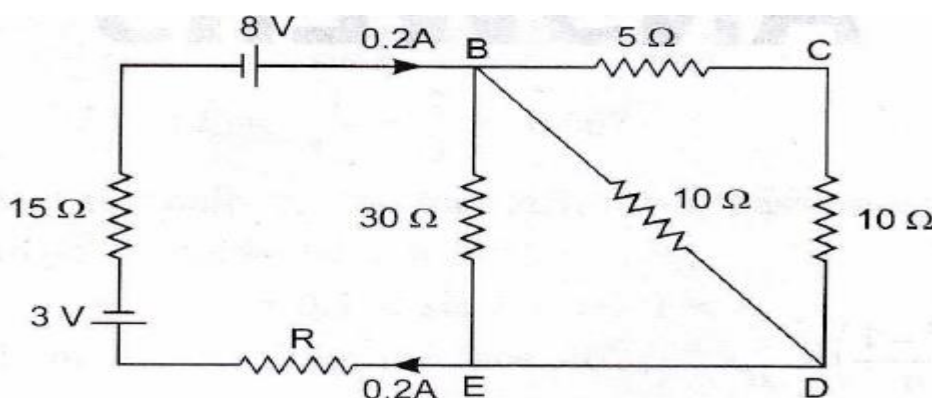
5. A parallel plate capacitor of capacitance 'C' is charged to a potential 'V' by a battery. Without disconnecting the battery, the distance between the plates is tripled and a dielectric medium of  $K = 10$  is introduced between the plates of the capacitor. Explain giving reasons, how will the following be affected.
  - (i) Capacitance of the capacitor
  - (ii) Charge of the capacitor
6. A metallic rod of length 'l' is moved perpendicular to its length with velocity 'v' in a magnetic field B acting perpendicular to the plane in which rod moves. Derive the expression for the induced emf.
7. Obtain the expression for the energy stored per unit volume in a charged parallel plate capacitor.
8. The electric field inside a parallel plate capacitor is 'E'. Find the amount of work done in moving a charge 'q' over a closed rectangular loop 'abcd'.



9. Find the charge on the capacitor as shown in the circuit.



10. Calculate the value of the resistance R in the circuit shown in the figure so that the current in the circuit is 0.2 A. What would be the potential difference between points B and E?



# CHEMISTRY

1. Describe the following reactions.

1. Hydroboration oxidation of alkanes
2. Williamson Synthesis
3. Reimer-Tiemann reaction
4. Kolbe's reaction
5. Friedel-Crafts acylation of anisole

2. How can the mixture of o-nitrophenol and p-nitrophenol be separated?

3. Name the chemical test commonly used to distinguish between the following pairs of compounds.

1. n-Propyl alcohol and isopropyl alcohol.
2. Methanol and ethanol
3. Cyclohexanol and phenol
4. Phenol and anisole
5. Ethanol and diethyl ether

4. Phenols are more acidic than alcohols. Explain.

5. Describe the reactions mentioned below and give an example:

(A) Swarts reaction.

(B) Finkelstein reaction.

(C) Wurtz reaction.

6. In the following pairs of halogen compounds, which compound undergoes faster SN1 reaction?

- i)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$  and  $\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$
- ii)  $\text{CH}_2=\text{CH}-\text{Cl}$  and  $\text{CH}_2=\text{CH}-\text{CH}_2\text{Cl}$

7. Arrange the following in the increasing order of properly indicated:

1. Bromomethane, chloromethane, dichloromethane. (Increasing order of boiling points).
2. 1-chloropropane, isopropyl chloride, 1-chlorobutane (Increasing order of boiling point)
3. o,m,p-dichlorobenzenes (Increasing order of melting points)

8. Out of o- and p-dibromobenzene which one has a higher melting point and why?

9. Haloarenes are less reactive than haloalkanes and haloarenes. Explain.

Project work: -Prepare project on any one topic.

1. Project on presence of insecticides and pesticides in food.
2. On study of quantity of casein present in different samples of milk.
3. On smoke bomb.

# BIOLOGY

1. What are flocs? State their role in the biological treatment of sewage.

2. What are sticky ends? State their significance in the Recombinant DNA technology.

3. A patient was advised to have a kidney transplant. To suppress the immune reaction, What would doctor administer him.
  4. Describe the role of heat, primers and the bacterium *Thermus aquaticus* in the process of PCR.
  5. (a) Draw a diagram of an antibody molecule and label the following in it .
    - (i) Antigen binding site
    - (ii) Heavy chain
    - (iii) Light chain
    - (iv) Disulphide bond
  - (b) Why is an antibody referred to as the H<sub>2</sub>L<sub>2</sub>?
  - (c) Name the four types of the antibody molecule produced in the human body.
  6. Name the primary and secondary lymphoid organs.
  7. Besides better aeration and mixing properties, what other advantages do stirred tank bioreactors have over shake flasks?
  8. Can you list 10 recombinant proteins which are used in medical practice? Find out where they are used as therapeutics.
  9. What would be the molar concentration of human DNA in a human cell?
  10. Name any two species of fungus, which are used in the production of the antibiotics.
- Project- The Effects of Diet on the Blood Glucose.

OR

The effect of sugar on bean plant growth.

## MATHEMATICS

1. Write the degree of the D.E  $x^3 \left(\frac{d^2y}{dx^2}\right)^2 + x\left(\frac{dy}{dx}\right)^4 = 0$ . (Ans: 2)
2. Write the degree of the D.E  $\left(\frac{d^2y}{dx^2}\right)^2 - 2\frac{d^2x}{dx^2} - \frac{dy}{dx} + 1 = 0$ . (Ans: 2).
3. Solve the D.E  $2x^2\frac{dy}{dx} - 2xy + y^2 = 0$  (Ans:  $y = \frac{-2x}{-\log x + c}$ )
4. Solve the D.E  $\frac{dy}{dx} = 1 + x^2 + y^2 + x^2y^2$ , given that  $y=1$  when  $x=0$ . (Ans:  $y = \tan\left(x + \frac{x^3}{3} + \frac{\pi}{4}\right)$ )
5. Solve  $x(x^2 - 1)\frac{dy}{dx} = 1$ ;  $y=0$  when  $x=2$ . (Ans:  $c = \log\frac{2}{\sqrt{3}}$ )
6. Find the particular solution of the D.E  $(1 + e^{2x})dy + (1 + y^2)e^x dx = 0$  given that  $y=1$  when  $x=0$ . (Ans:  $\tan^{-1}y + \tan^{-1}e^x = \frac{\pi}{2}$ ).
7. Solve D.E  $\frac{dy}{dx} + y \cot x = 4x \operatorname{cosec} x$ , given that  $y=0$  when  $x = \frac{\pi}{2}$ . (Ans:  $c = -\frac{\pi^2}{2}$ )
8. Solve the following D.E  $(1 + x^2)\frac{dy}{dx} + 2xy = \frac{1}{1 + x^2}$ , given  $y=0$  when  $x=1$  (Ans:  $c = \frac{-\pi}{4}$ )
9. Solve the following D.E  $x dy - y dx = \sqrt{x^2 + y^2} dx$  (Ans:  $y + \sqrt{x^2 + y^2} = Ax^2$ ).
10. Solve the following D.E  $(y + 3x^2)\frac{dx}{dy} = x$ . (Ans:  $y = 3x^2 + C$ )
11. Solve the D.E  $x dy - (y + 2x^2) dx = 0$  (Ans:  $y = \frac{2x^2}{3} + \frac{c}{x}$ )

12. Solve the D.E  $x dy + (y - x^3) dx = 0$  (Ans:  $y = \frac{x^3}{4} + \frac{c}{x}$ )
13. Solve the following D.E  $e^x \tan y dx + (1 - e^x) \sec^2 y dy = 0$  (Ans:  $y = \tan^{-1}(\frac{e^x - 1}{c})$ ).
14. Solve D.E  $\cos^2 x \frac{dy}{dx} + y = \tan x$  (Ans:  $y = \tan x - 1 + c e^{-\tan x}$ )
15. Solve the D.E  $(1 + y^2)(1 + \log x) dx + x dy = 0$  (Ans:  $y = \tan(-\log x - \frac{(\log x)^2}{2} - c)$ )
16. Solve  $(1 + x^2) dy + 2xy dx = \cot x dx$  (Ans:  $y = \frac{\log(\sin x)}{1 + x^2} + \frac{c}{1 + x^2}$ )
17. Solve the D.E:  $\frac{dy}{dx} - \frac{y}{x} + \operatorname{cosec}(\frac{y}{x}) = 1$ , when  $x = 1$  and  $y = 0$ . (Ans:  $\cos \frac{y}{x} = \log x + 1$ .)
18. Solve the following D.E  $[x \sin^2(\frac{y}{x}) - y] dx + x dy = 0$  (Ans:  $\frac{y}{x} = \cot^{-1}(\log x - C)$ ).
19. Solve the following D.E  $x \frac{dy}{dx} + y - x + x y \cot x = 0$  (Ans:  $y = -\cot x + \frac{1}{x} + \frac{c}{x \sin x}$ )
20. Solve the following D.E  $(x \cos \frac{y}{x} + y \sin \frac{y}{x}) y - (y \sin \frac{y}{x} - x \cos \frac{y}{x}) x \frac{dy}{dx} = 0$ . (Ans:  $\log \left| \frac{\sec \frac{y}{x}}{xy} \right| = C$ ).
21. Solve the D.E  $y dx + x \log \frac{y}{x} dy - 2xy dy = 0$  (Ans:  $\log \left| \frac{\log \frac{y}{x} - 1}{y} \right| = C$ ).
22. Find the particular solution of the D.E  $(\tan^{-1} x) dy = (1 + y^2) dx$ , given that when  $x = 0, y = 0$   
(Ans:  $x = \tan^{-1} y - 1 + e^{\tan^{-1} y}$ )
23. Solve the following D.E  $\sqrt{1 + x^2 + y^2 + x^2 y^2} + xy \frac{dy}{dx} = 0$ . (Ans:  $\sqrt{1 + x^2} + \sqrt{1 + y^2} + \log(\frac{\sqrt{x^2 + 1} - 1}{x}) = C$ ).
24. Solve the following D.E  $(x^3 + x^2 + x + 1) \frac{dy}{dx} = 2x^2 + x$  (Ans:  $y = \frac{1}{2} \log(x + 1) + \frac{3}{4} \log(x^2 + 1) - \frac{1}{2} \tan^{-1} x + c$ ).
25. Find the particular solution of the D.E  $(x - \sin y) dy + (\tan y dx) = 0$ : given that  $y = 0$   
when  $x = 0$ . (Ans:  $c = 1/4$ ).
26. Solve the following D.E:  $y e^{\frac{x}{y}} dx = (x e^{\frac{x}{y}} + y) dy$ . (Ans:  $e^{\frac{x}{y}} = \log cy$ .)
27. Solve the following D.E  $(1 + y + x^2 y) dx + (x + x^3) dy = 0$ , where  $y = 0$  when  $x = 1$ . (Ans:  $C = \frac{\pi}{4}$ ).
28. Find the particular solution of the D.E  $(x dy - y dx) y \sin(\frac{y}{x}) = (y dx + x dy) x \cos \frac{y}{x}$ , given that  $y = \pi$  when  
 $x = 3$ . (Ans:  $C = \frac{3\pi}{2}$ ).
29. Solve  $x dy - y dx = \sqrt{x^2 + y^2} dx$  (Ans:  $\{y + \sqrt{x^2 + y^2}\}^2 = C^2 x^4$ ).
30. Find the general solution of the D.E  $\frac{dy}{dx} - 3y = \sin 2x$ . (Ans:  $y = \frac{-3}{13} (2 \cos 2x + \sin 2x) + C e^{3x}$ ).
31. Solve the D.E  $\frac{dy}{dx} + y \sec^2 x = \tan x \sec^2 x; y(0) = 1$ . (Ans:  $y = \tan x - 1 + 2e^{-\tan x}$ .)
32. Solve the D.E  $x \frac{dy}{dx} - y = \sqrt{x^2 + y^2}$ . (Ans:  $y + \sqrt{x^2 + y^2} = Cx^2$ ).
33. Find the particular solution of the D.E  $\log(\frac{dy}{dx}) = 3x + 4y'$  given that  $y = 0$  when  $x = 0$ . (Ans:  $4e^{3x} + 3e^{-4y} - 7 = 0$ ).
34. Show that the following D.E is homogeneous and then solve it:  $y dx + x \log(\frac{y}{x}) dy - 2x dy = 0$ . (Ans:  $\log(\frac{y}{x}) - 1 = cy$ ).
35. Solve the following D.E:  $x \log x \frac{dy}{dx} + y = \frac{2}{x} \log x$  (Ans:  $y \log x = \frac{-2(1 + \log x)}{x} + C$ ).
36. Solve the D.E  $(x^2 - y^2) dx + 2xy dy = 0$  given that  $y = 1$ , when  $x = 1$ . (Ans:  $x^2 + y^2 = cx$ ).
37. Solve the D.E  $(3xy + y^2) dx + (x^2 + xy) dy = 0$  (Ans:  $y = -4 \log x + c$ ).
38. Solve the D.E:  $\frac{dy}{dx} = e^{x-y} + x^3 e^{-y}$ . (Ans:  $e^y = e^x + \frac{x^4}{4} + C$ )
39. Solve the following D.E:  $\frac{dy}{dx} = \frac{x(2 \log x + 1)}{\sin y + y \cos y}$ . (Ans:  $\sin y = x^2 \log x + c$ ).
40. Solve the initial value problem:  $x e^{\frac{y}{x}} - y \sin(\frac{y}{x}) + x \frac{dy}{dx} \sin(\frac{y}{x}) = 0; y(1) = 0$ . (Ans:  $c = 1 + \log x^2$ ).
41. Solve the D.E  $(x - y) \frac{dy}{dx} = x + 3y$ . (Ans:  $\frac{-2x}{x + y} = \log(c(x + y))$ ).
42. Solve the D.E  $\sin x \frac{dy}{dx} + y \cos x = 2 \sin^{-1} x \cos x$  given that  $y = 1$  when  $x = \frac{\pi}{2}$ . (Ans:  $y \sin x = \frac{2}{3} \sin^3 x + c$ ).

43. For the following D.E, find a particular solution satisfying the given condition:

$$\frac{dy}{dx} - 3y \cot x = \sin 2x; y = 2 \text{ when } x = \frac{\pi}{2} \text{ (Ans: } y = 4\sin^3 x - 2\sin^2 x \text{).}$$

Activity:

1. To verify that amongst all the rectangles of the same perimeter, the square has the maximum area.
2. To verify that angle in a semi circle is a right angle, using vector method

## **I.P**

HOLIDAY HW: PREPARE THE PROJECT GIVEN THE CLASS FOR BOARD EXAMINATION.

## **P.HE**

Complete your CW copy (by writing all the important notes as directed).

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