

# DELHI PUBLIC SCHOOL ALIGARH

Holiday HW (2016-17)

Class XII

CLASS	SUBJECT	DESCRIPTION OF SYLLABUS	TEACHER SIGN.	HOD SIGN.
XII	ENGLISH	1. Read the novel, "Invisible Man" and write notes on theme, main characters and main incidents of the novel in writing skills notebook.		
XII	MATHS	1. Let $A = \mathbb{R} - \{3\}$ and $B = \mathbb{R} - \{1\}$ , consider the function $f : A \rightarrow B : f(x) = \frac{x-2}{x-3}$ , show that $f$ is one-one onto. $f : \mathbb{Z} \rightarrow \mathbb{Z} : f(n) = 3n \text{ and } g : \mathbb{Z} \rightarrow \mathbb{Z},$ 2. Let $g(n) = \begin{cases} \frac{n}{3} & \text{if } n \text{ is a multiple of } 3 \\ 0, & \text{if } n \text{ is not a multiple of } 3. \end{cases}$ show that $g \circ f = I_{\mathbb{Z}}$ and $f \circ g \neq I_{\mathbb{Z}}$ (i) $\tan^{-1} \left( \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1+x} + \sqrt{1-x}} \right) = \frac{\pi}{4} - \frac{1}{2} \cos^{-1} x, \quad -\frac{1}{\sqrt{2}} \leq x \leq 1.$ 3. (ii) $\cot^{-1} \left( \frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}} \right) = \frac{x}{2}, \quad x \in \left( 0, \frac{\pi}{4} \right).$ 4. Show that (i) $\sin^{-1} \frac{12}{13} + \cos^{-1} \frac{4}{5} + \tan^{-1} \frac{63}{16} = \pi$ (ii) $\tan^{-1} \left( \frac{a \cos x - b \sin x}{b \cos x + a \sin x} \right), \text{ if } \frac{a}{b} \tan x > -1.$ (iii) $\cos^{-1} \frac{x}{a} + \cos^{-1} \frac{y}{b} = \alpha, \text{ prove that } \frac{x^2}{a^2} - \frac{2xy}{ab} \cos \alpha + \frac{y^2}{b^2} = \sin^2 \alpha.$ 5. Express the matrix $B = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ as the sum of a symmetric and a skew symmetric matrix. 6. Obtain the inverse of the following matrix using elementary operations : (i) $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$ (ii) $B = \begin{bmatrix} 1 & 3 & -2 \\ -3 & 0 & -5 \\ 2 & 5 & 0 \end{bmatrix}.$ 7. If $\begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$ , find $A^{-1}$ . Using $A^{-1}$ solve the system of equations $2x - 3y + 5z = 11, \quad 3x + 2y - 4z = -5, \quad x + y - 2z = -3.$		

		<p>8. Show that <math display="block">\begin{vmatrix} (y+z)^2 &amp; xy &amp; zx \\ xy &amp; (x+z)^2 &amp; yz \\ xz &amp; yz &amp; (x+y)^2 \end{vmatrix} = 2xyz(x+y+z)^3.</math></p> <p>9. If <math>f(x)</math> is continuous for <math>0 \leq x \leq \pi</math>, find the value of <math>a</math> and <math>b</math> when <math display="block">f(x) = \begin{cases} x + a\sqrt{2} \sin x, &amp; \text{if } 0 \leq x &lt; \frac{\pi}{4} \\ 2x \cot x + b, &amp; \text{if } \frac{\pi}{4} \leq x \leq \frac{\pi}{2} \\ a \cos 2x - b \sin x, &amp; \text{if } \frac{\pi}{2} &lt; x &lt; \pi \end{cases}</math></p> <p>10. If <math>\cos y = x \cos (a+y)</math>, with <math>\cos a \neq \pm 1</math>, prove that <math display="block">\frac{dy}{dx} = \frac{\cos^2(a+y)}{\sin a}.</math></p>		
XII	PHYSICS	<ol style="list-style-type: none"> <li>Find the electric field due to an electric dipole on axial position.</li> <li>Find the electric field due to an electric dipole on equatorial position.</li> <li>State Gauss theorem. Find the electric field due to a long charged conducting wire inside or outside.</li> <li>State Gauss theorem. Find the electric field due to charged conducting sphere.</li> <li>State Gauss theorem. Find the electric field due to an infinite charged conducting sheet.</li> <li>What is the electric potential. Derive the formula of electric potential.</li> <li>What is the electric potential energy. Derive the formula of electric potential energy.</li> <li>What is the capacitor. Derive the formula for capacity of parallel plate capacitor in air or vacuum.</li> <li>Derive the formula for energy stored in the parallel plate capacitor.</li> <li>Derive the formula for capacity of a parallel plate capacitor when a di-electric slab of di-electric constant <math>K</math> and thickness <math>t</math> filled between the plates of the capacitor.</li> </ol>		
XII	CHEMISTRY	Prepare an investigatory project assigned to you involving laboratory experiments or data collection for your CBSE Board Practical Exam.		
XII	BIOLOGY	Prepare an investigatory project of biology for class xii annual practical 2016-17 and submit the same as soon as school gets opened in the month of July 2016.		
XII	ACCOUNT	<p>Q1. P and Q are partners in a firm with capital of Rs 3,00,000 and Rs 2,00,000 respectively. P gave a loan of Rs 1,50,000 to the firm. The profit of the firm before allowing interest on loan amounted to Rs 75,000 for the year ending 31<sup>st</sup> March 2010. Show distribution of profit after considering the followings:</p> <p>a) Interest on capital be allowed @ 5% per annum</p>		

- b) Interest on drawing is charged @ 6 % per annum. Drawing of P and Q during the year were Rs 50,000 and Rs 40,000 respectively
- c) P is allowed commission @ 1 % on sales which is Rs 3,00,000.
- d) Q is entitled to a commission @ 5 % of net profit after charging commission of P and his own.

10% of divisible profit is to be transferred to Reserve Account.

Q2. A, B and C entered into partnership on 1<sup>st</sup> October 2014 to share profit and losses in the ratio 3:3:2. Capital contributed by A, B and C were Rs 3,00,000, Rs 2,00,000 and Rs 1,00,000 respectively. The profit for the year ended 31/3/2015 was Rs 1, 13,350. Show distribution of profit after considering following:

- a) Interest on capital allowed @10% per annum
- b) 'A' is entitled to salary of Rs 3,000 per annum
- c) Interest on drawing is charged @ 5% per annum. During the year, 'A' withdrew Rs 12,000 at end of each quarter and 'B' withdrew Rs 18,000 at end of half year.
- d) 'B' and 'C' had guaranteed a minimum profit of Rs 70,000 per annum to 'A'.

Prepare P/L Appropriation and Partners Capital account.

Q3. X proposes to purchase the business carried on by Y. Goodwill is agreed to be valued on the basis of three years purchase of the weighted average profit of the last four years. The profit of the last four years were; 2006-- 24,000; 2007—29,000; 2008—23,000 and 2009—35,000. The weight to be assigned will be in ascending order. You are supplied the following information:

- a) On 1<sup>st</sup> October, 2008, a major repair was made in plant incurring Rs 8,000 which amount was charged to revenue. The said sum is agreed to be capitalized for computation of goodwill subject to depreciation @ 10% per annum on diminishing balance method.
- b) The closing stock for the years 2007 was overvalued by Rs. 2,000.
- c) It is also agreed that Rs 3,000 be charged on annual basis as management expenses which have not been charged earlier.

Compute the value of goodwill of business of Y.

Q4. E. and F were partners in the firm sharing profit in the ratio of 3:1. They admitted G as a new partner on 1/4/2009 for 1/3 share. It was decided that E.F and G will share future profit equally. G brought Rs. 50,000 in cash and Machinery worth Rs. 70,000 for his share of profit as premium for goodwill. Showing your calculation clearly, pass necessary journal entries in the books of the firm.

Q5. A and B are partners sharing profit and losses in the ratio 3:2. Their Balance Sheet 31/12/ 2010 stood as:

Liabilities	Rs	
A's Capital	65,000	Fixed Assets
B's capital	22,000	Investment
Reserve	10,000	Stock
Creditors	30,000	Book Debts
		Cash
	<b>1,27,000</b>	

C was admitted as a partner on this date for 25% share of profits on following terms:

- a) Their profit sharing ratio will be 3:3:2.
- b) C brings Rs 10,000 for his share of goodwill and sufficient capital proportionate to profit.
- c) Half the investment was taken over by A and B in their profit sharing ratio and remaining investment is valued at 25% more than book value.
- d) 10% of reserve is to be considered as provision for doubtful debts on book debts.
- e) Stock is found to be overvalued by 10%.
- f) Fixed asset is to be depreciated by 5%.

		Prepare Revaluation Account, Partners Capital Accounts and Balance Sheet of new firm		
XII	B.St.	<p>Sigma Ltd. Set up a factory to manufacture solar lanterns in a remote village as there was no reliable supply of electricity in rural areas. The revenue earned by the company was sufficient to cover the cost and risks. The demand of lanterns was increasing day by day, so the company decided to increase production to generate higher sales. For this, they decided to employ people from nearby village as very few hands were available in that area. The company also decided to open schools and crèches for children of its employees.</p> <p>(i). Identify and explain the objectives of management discussed above.</p> <p>(ii). State any two values which the company wanted to communicate to the society.</p> <p>‘Sonu Nigam’ the famous playback singer always spends time for practice and adds his creativity in his singing.</p> <p>Like Sonu Nigam Mr. Sanjay, Manager of Headlines Ltd. Uses his creativity and practice management principles under different situations to manage the business. The employees are happy and satisfied as he every day reward employees for their punctuality and efficiency.</p> <p>(a). Identify the nature of management highlighted above.</p> <p>(b). Name other two aspects of nature of management.</p> <p>(c). Identify the values followed by Mr. Sanjay.</p> <p>Write one violating effect each of the 14 Principles of management given by Henry Fayol. One of the principles of scientific management emphasizes to make the employee efficient, by training the workers. It further insists that each employee must be scientifically selected and work assigned to employees should suit their physical, mental and intellectual capabilities.</p> <p>(i). Name and explain the Principle of scientific management involved in above case.</p> <p>(ii). Name the value emphasized by this principle.</p> <p>After winning the election, Prime Minister Mr. Modi launched a campaign of ‘Swachh Bharat’ and involved various celebrities to be a part of this Abhiyan. This spread awareness among the people in society and in general, people started becoming more careful and aware about the cleanliness around their area. To continue its impact, a new service tax for Swachh Bharat was also started. The government is planning to import new and better technology to adopt new methods of treating the garbage and waste.</p> <p>State the various dimensions of business environment mentioning in the above para and quoting the lines from the above para.</p>		
XII	ECONOMICS	<p>1- ‘Both microeconomics and macroeconomics have same degree of aggregation’. Defend or refute.</p> <p>2- A consumer wants to consume two goods. The prices of the two goods are Rs 10 and Rs 5 respectively. The consumer’s income is Rs 40.</p> <p>(a) Write down the equation of budget line.</p> <p>(b) Write down all the bundles available to the consumer.</p> <p>(c) Write down all the bundles that exactly costs Rs 40</p> <p>(d) What is the slope of budget line?</p>		

		<p>3- (a) "Law of demand is a qualitative statement". Comment.</p> <p>(b) Derive the law of demand from the single commodity equilibrium condition "Marginal utility=Price".</p> <p>4- The equality of marginal cost and marginal revenue is a condition necessary for equilibrium, but it is not by itself sufficient to assure the attainment of producer's equilibrium. Comment.</p> <p>5- Explain Why Supply curve is the rising portion of the Marginal cost curve. Use diagram.</p>		
<b>XII</b>	<b>HISTORY</b>	<p>1. Write the question answer of all the unseen passages of two chapters namely "India through the eyes of travellers" and "Bhakti-Sufi tradition".</p>		