DELHI PUBLIC SCHOOL GAYA

ASSIGNMENT-2, SESSION 2018–19

CLASS – X

ENGLISH

1. A king and his queen had a beautiful daughter. The princess was very proud of her beauty. They thought of marrying her off. But she rejected all the proposals…….
   Develop the given hints into a meaningful story.
2. Ali is true representative of modern parents who are abandoned by their children. Explain.
3. Anne did not have a filial bond with her mother. Discuss.

HINDI

1. भारतीय राष्ट्रीय आन्दोलन में महिलाओं की सक्रिय भूमिका के बारे में जानकारी प्राप्त कीजिए एवं किन्हीं दो के योगदान पर विस्तार से लिखिए।
2. अपने प्रिय साहित्यकार या संगीतकार के बारे में 100 – 125 शब्दों में एक लघु – निबन्ध लिखिए।
3. ऋतुओं के बहुत ही सुंदर शब्द – चित्र दिखते हैं। बदलते हुए मौसम को दर्शाते हुए चित्रों का संग्रह कीजिए एवं उनके बारे में संक्षेप में लिखिए।

MATHEMATICS (TRIGONOMETRY)

1. Evaluate each of the following :

(i) $\frac{\cos 70^o}{\sin 20^o} + \frac{\cos 55^o \operatorname{cosec} 35^o}{\tan 5^o \tan 25^o \tan 45^o \tan 65^o \tan 85^o}$

(ii) $2\left(\frac{\cos 58^o}{\sin 32^o}\right) - \sqrt{3}\left(\frac{\cos 38^o \operatorname{cosec} 52^o}{\tan 15^o \tan 60^o \tan 75^o}\right)$

(iii) If A + B = 90^o, prove that $\sqrt{\frac{\tan A \tan B + \tan A \cot B}{\sin A \sec B} - \frac{\sin^2 B}{\cos^2 A}} = \tan A$

(iv) $\frac{\cos(90^o-\theta)\sec(90^o-\theta)\tan\theta}{\operatorname{cosec}(90^o-\theta)\sin(90^o-\theta)\cot(90^o-\theta)} + \frac{\tan(90^o-\theta)}{\cot\theta} = 2$

(v) $\sin(50^o+\theta) - \cos(40^o-\theta) + \tan 1^o \tan 10^o \tan 20^o \tan 70^o \tan 80^o \tan 89^o = 1$

(vi) $\operatorname{cosec}(65^o+\theta) - \sec(25^o-\theta) - \tan(55^o-\theta) + \cot(35^o+\theta)$

(vii) $\frac{2\sin 68^o}{\cos 22^o} - \frac{2\cot 15^o}{5\tan 75^o} - \frac{3\tan 45^o \tan 20^o \tan 40^o \tan 50^o \tan 70^o}{5}$

(viii) $\frac{3\cos 55^o}{7\sin 35^o} - \frac{4(\cos 70^o \operatorname{cosec} 20^o)}{7(\tan 5^o \tan 25^o \tan 45^o \tan 65^o \tan 85^o)}$

(ix) $\frac{\sin 18^o}{\cos 72^o} + \sqrt{3}\{\tan 10^o \tan 30^o \tan 40^o \tan 50^o \tan 80^o\}$

(x) $\frac{\cos 58^o}{\sin 32^o} + \frac{\sin 22^o}{\cos 68^o} - \frac{\cos 38^o \operatorname{cosec} 52^o}{\tan 18^o \tan 35^o \tan 60^o \tan 72^o \tan 55^o}$

2. Prove the following identities:

(i) $\frac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1} = \frac{1 + \sin\theta}{\cos\theta}$

(ii) $\frac{\cot A + \operatorname{cosec} A - 1}{\cot A - \operatorname{cosec} A + 1} = \frac{1 + \cos\theta}{\sin A}$

(iii) $\frac{\sin\theta}{\cot\theta + \operatorname{cosec}\theta} = 2 + \frac{\sin\theta}{\cos\theta - \operatorname{cosec}\theta}$

(iv) $\sin^6\theta + \cos^6\theta + 3\sin^2\theta\cos^2\theta = 1$

(v) $(\sin^8\theta - \cos^8\theta) = (\sin^2\theta - \cos^2\theta)(1 - 2\sin^2\theta\cos^2\theta)$

(vi) $(1 + \tan A \tan B)^2 + (\tan A - \tan B)^2 = \sec^2 A\, sec^2 B$

(vii) $\frac{\cos A}{1-\sin A} + \frac{\sin A}{1-\cos A} + 1 = \frac{\sin A \cos A}{(1-\sin A)(1-\cos A)}$

(viii) $\frac{(1 + \cot A + \tan A)(\sin A - \cos A)}{\sec^3 A - \operatorname{cosec}^3 A} = \sin^2 A \cos^2 A$

(ix) $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \operatorname{cosec}\theta - \cot\theta$

(x) $\frac{1 - \cos\theta}{\sin\theta} = \frac{\sin\theta}{1 + \cos\theta}$

(xi) $\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = 1 + \tan\theta\cot\theta$

(xii) $\sec^6\theta = \tan^6\theta + 3\tan^2\theta\sec^2\theta + 1$

(xiii) $\operatorname{cosec}^6\theta = \cot^6\theta + 3\cot^2\theta\operatorname{cosec}^2\theta + 1$

(xiv) $\frac{\sec A - \tan A}{\sec A + \tan A} = \frac{\cos^2 A}{(1+\sin A)^2}$

(xv) $\sqrt{\frac{1 - \cos A}{1 + \cos A}} + \sqrt{\frac{1 + \cos A}{1 - \cos A}} = 2\operatorname{cosec} A$

(xvi) $\sqrt{\frac{1 + \sin\theta}{1 - \sin\theta}} + \sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = 2\sec\theta$

(xvii) $\frac{1+\cos\theta+\sin\theta}{1+\cos\theta-\sin\theta} = \frac{1+\sin\theta}{\cos\theta}$

(xviii) $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$

(xix) $\frac{\cos\theta - \sin\theta + 1}{\cos\theta + \sin\theta - 1} = \operatorname{cosec}\theta + \cot\theta$

(xx) $\frac{1}{\sec A + \tan A} - \frac{1}{\cos A} = \frac{1}{\cos A} - \frac{1}{\sec A - \tan A}$

(xxi) $\frac{\tan A}{1 + \sec A} - \frac{\tan A}{1 - \sec A} = 2\operatorname{cosec} A$

(xxii) $\frac{\cos\theta}{\operatorname{cosec}\theta+1} + \frac{\cos\theta}{\operatorname{cosec}\theta-1} = 2\tan\theta$

(xxiii) $\frac{\cot A + \tan B}{\cot B + \tan A} = \cot A \tan B$

(xxiv) $\frac{\tan A + \tan B}{\cot A + \cot B} = \tan A \tan B$

(xxv) $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$

3. If $\sec\theta + \tan\theta = p$, show that $\frac{p^2-1}{p^2+1} = \sin\theta$.

4. If $\operatorname{cosec}\theta + \cot\theta = p$, then prove that $\cos\theta = \frac{p^2-1}{p^2+1}$.

5. If $\frac{\cos\alpha}{\cos\beta} = m$ and $\frac{\cos\alpha}{\sin\beta} = n$ show that $(m^2 + n^2)\cos^2\beta = n^2$.

6. If $\operatorname{cosec}\theta - \sin\theta = m$, and $\sec\theta - \cos\theta = n$, prove that $(m^2n)^{2/3} + (mn^2)^{2/3} = 1$

7. If $\sin\theta + \cos\theta = \sqrt{3}$, then prove that $\tan\theta + \cot\theta = 1$.

8. If $1 + \sin^2\theta = 3\sin\theta\cos\theta$, prove that $\tan\theta = 1$ or $\frac{1}{2}$.

9. If $x = a\sec\theta + b\tan\theta$ and $y = a\tan\theta + b\sec\theta$, prove that $x^2 - y^2 = a^2 - b^2$

SCIENCE

Physics

1. For the same angle of incidence 45 degree, the angle of refraction in two transparent media 1 and 2 is 20 degree and 30 degree respectively. Out of 1and 2 which is optically denser medium and why?
2. A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object? Also, find the power of the lens.

Chemistry

1. Explain the cleansing action of soap. Draw diagrams to illustrate your answer.
2. Write the rules for naming carbon compounds containing functional groups.
3. Explain electrolytic refining of copper with the help of diagram and reactions at anode and cathode.
4. What does a soda-acid type fire extinguisher contain? Explain its working with the help of a labelled diagram.
5. How do acids react with metals, metal carbonates, metal hydrogencarbonates, bases and metallic oxides? Give one example each.
6. How metals in the middle of reactivity series are extracted?

Biology

1. "Energy flow in food chain is always unidirectional". Justify this statement. Explain how the pesticides enter a food chain and subsequently get into our body.
2. "Damage to the ozone layer is cause for cancers. Justify this statement. Suggest any two steps to limit this damage.
3. Why is improper disposal of waste a curse to environment?
4. We do not clean ponds or lakes, but an aquarium needs to be cleared. Why?

SOCIAL SCIENCE

History/Civics

1. Write short notes on
   (a) The Gutenberg Press.
   (b) Erasmus's idea of the printed book.
   (c) The Vernacular Press Act.
2. Explain how print culture assisted the growth of nationalism in India.
3. Why is power sharing desirable? Give any three prudential reasons.

Geography

1. What are the important features of SEZ. What are the important features of Vidyasagar industrial Park and Nimpura Industrial Park, Kharagpur.
2. Compare the status of Bengal Nagpur Railway of the past with the present South Eastern Railways.

Economics

1. What is the role of Bank Credit in stimulating the growth of GDP? Explain with examples the following cases where :
   (a) Credit plays a vital and positive role.
   (b) Credit pushes the borrower into a situation from which recovery is very painful.
2. In what manner the Self Help Groups (SHGs) is a force to reckon with not just in economic sense but also in social sense?
3. Do you think that Demand deposits are similar to currency or money? What makes the cheques and Demand Draft less liquid than currency in hand?

SANSKRIT

1. ''दुर्गा पूजा किमर्थं भवति'' इति विषयमाधृत्य दश वाक्यानि रचयत।
2. प्रत्ययं योजयित्वा पदानि रचयत्।
   क्त्वा, ल्यप्, क्त, क्तवतु, शतृ, शानच्, तुमुन् एतेषाम् प्रत्ययानां प्रयोज्य पञ्च–पञ्च पदानि रचयत।
3. पाठ – सूक्तिमौकितकम् श्लोकान् स्मरत आगत्य कक्षायां श्रावयत च।

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