

NEW STANDARD ACADEMY

SEMRI KOTHI SUPER MARKET, RAEBARELI

CLASS 11 (PHYSICS) DPP (Academy) 19/08/2024

1. Air is thrown on the soil of a stationary boat by an electric fan kept on it. The boat will
2. A brick slides on a horizontal surface. Which of the following will increase the magnitude of frictional force on it?
3. A box is placed on the bed of a truck. When the truck accelerates in the forward direction, then the direction of force of friction between the lower surface of the box and the bed of the truck is
4. A body of weight W rests on a frictional surface. The angle between the force of friction and the normal reaction is
5. In order to move a body of mass m once up and once down a smooth inclined plane of inclination θ , the total work done in moving the body through a distance S of the plane
6. If the normal force is doubled, then the coefficient of friction is?
7. Static friction is a self-adjusting force, why?
8. Why is sand thrown on roads/tracks covered with snow?
9. Explain why carts with rubber tyres are easier to drive than those with iron wheels?
10. Why do we slip easily on a rainy day?
11. Why is centripetal force so called?
12. Why are wheels made circular? Explain.
13. It is easier to roll a barrel than to pull it along the road. Explain why?
14. It is difficult to move a cycle along a road with its brakes on. Explain why?
15. How does friction help us in walking?
16. Why is it difficult to walk on sand?
17. Why does a cyclist bend inward while riding along a curved road?
18. On what factors does the coefficient of friction depend?
19. What type of friction is involved when an axle rotates in a sleeve?
20. Does friction depend on the actual area of contact?

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CLASS 11 (Biology) DPP (Academy) 19/08/2024

1. What is the difference between PSI and PS II?
2. What is photolysis of water?
3. What is the site of the C_3 cycle?
4. What is the site of the light reaction?
5. What is cyclic photophosphorylation?
6. What is non-cyclic photophosphorylation?
7. What is the reaction center in the photosystem?
8. What is the full form of NADP?
9. Which light has the highest rate of photosynthesis?
10. Which light has the lowest rate of photosynthesis?
11. What conditions are necessary for photosynthesis?
12. How can you show that sunlight is essential for photosynthesis? »
13. What does the half-leaf experiment prove?
14. Where does most of a plant's biomass come from?
15. Give the difference between photosynthesis and respiration.
16. Photosynthesis is an anabolic process. Justify.
17. What is the site of photosynthesis?
18. What is the primary purpose of photosynthesis in plants?
19. What is the absorption spectrum and the action spectrum?
20. Name the first formed category of photosynthetic organisms.

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CLASS 11 (maths) DPP (Academy) 19/08/2024

1. $\int \frac{1+\cos^2 x}{1+\cos 2x} dx$

2. $\int \frac{1+\tan^2 x}{1+\tan^2 x} dx$

3. $\int \frac{e^{5\ln x} - e^{4\ln x}}{e^{3\ln x} - e^{2\ln x}} dx$

4. $\int (e^{a/nx} + e^{x/na}) dx \quad (a > 0)$

5. $\int \frac{\cos 2x}{\cos^2 x \sin^2 x} dx$

6. $\int 4 \cos \frac{x}{2} \cdot \cos x \cdot \sin \frac{21}{2} x dx$

7. $\int \cos x^\circ dx$

8. $\int \frac{\sec 2x - 1}{\sec 2x + 1} dx$

9. $\int \frac{\cos^4 x - \sin^4 x}{\sqrt{1 + \cos 4x}} dx \quad (\cos 2x > 0)$

10. $\int \frac{dx}{\sqrt{9 - 16x^2}}$

11. $\int \frac{dx}{1 + \sin x}$

12. $\int \frac{(\sin 2x) - (\sin 2k)}{\sin x - \sin k + \cos x - \cos k}$

13. $\int \frac{x^2 + 3}{x^6(x^2 + 1)} dx$

14. $\int x^x \ln(ex) dx$

15. $\int \frac{\cos 8x - \cos 7x}{1 + 2\cos 5x} dx$

16. $\int \frac{(x^2 + \sin^2 x) \sec^2 x}{1 + x^2} dx$

17. $\int \frac{\sec 2x}{\sec 2x + 1} dx$

18. $\int \frac{dx}{25 + 4x^2}$

19. $\int \frac{dx}{1 + \sin x}$

20. $\int \frac{\cos 8x - \cos 7x}{1 + 2\cos 5x} dx$

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CLASS 11 (CHEMISTRY) DPP (Academy) 19/08/2024

- Describe open, closed and isolated systems with examples.
- What is meant by Gibbs free energy change? The sign of free energy is very important. Justify the statement.
- Explain the following:
 - Enthalpy
 - Entropy and free energy
 - internal energy
- Explain the following :
 - Enthalpy of formation
 - Enthalpy of combustion
 - Enthalpy of hydration and enthalpy of solution
- Derive the relation between q_p and q_v or ΔH and ΔU .
- What is spontaneous process ? Why can only the energy factor or entropy factor not explain the spontaneity of a process?
- State Hess's law. How does it follow the first law of thermodynamics? What applications? are its important
- Why entropy is a state function? Explain the effect of temperature on entropy
- Give at least two statements of the second law of thermodynamics.
- Explain the spontaneous and non-spontaneous process. Mention the conditions for a reaction to be spontaneous at const. T and const. P.
- Explain the effect of temperature on the spontaneity of an exothermic and endothermic reaction in terms of Gibbs-Helmholtz equation.
- What is free energy and free energy change ? Show that the change in free energy is equal to the useful work done.
- Predict the enthalpy change, free energy change and entropy change when ammonium chloride is dissolved in water and aqueous solution becomes colder.
Hint :[$\Delta H = ve$, $\Delta G = - Ve$ $\Delta S = ve$]
- Define entropy and free energy. How are these related to enthalpy?
- Enthalpy of formation of an element in its standard state at 298 K and 1 atm pressure is zero, but its entropy under identical conditions is not zero, comment.
- Starting with the thermodynamic relationship: $\Delta U = q - P\Delta V$ and $H = U + PV$ derive the relationship $\Delta H = q_p$.
- Derive an expression for the work of expansion of a gas ($w = - P\Delta V$)
- State first law of thermodynamics and derive a mathematical expression for it.
- Enthalpy of neutralisation of strong acids and strong bases is always constant, explain.
- What do you understand by internal energy?