GUESS PAPERS

MODEL PAPER-1

JR.PHYSICS

SECTION-A

I. Answer ALL the following VSAQ: 10 x 2=20

1. What is Physics? [☞P 39(46)]
2. How can systematic errors be minimised or eliminated? [☞P 40(51)]
3. If $\vec{A} = \vec{i} + \vec{j}$, what is the angle between vector $\vec{A}$ with x -axis? [☞P 41(58)]
4. A horse has to exert a greater force during the start of the motion than later. Explain. [☞P 42(64)]
5. Give the expression for the excess pressure in a liquid drop. [☞P 45(83)]
6. What is angle of contact? [☞P 45(81)]
7. Why gaps are left between rails on a railway track? [☞P 46(87)]
8. Why utensils are coated black? Why the bottom of the utensils are made of copper? [☞P 47(96)]
9. When does a real gas behave like an ideal gas? [☞P 48(101)]
10. State Boyle's law and Charles law. [☞P 48(98)]

SECTION-B

II. Answer any SIX of the following SAQs: 6 x 4=24

11. A car travels the first third of a distance with a speed of 10kmph, the second third at 20kmph and the last third at 60kmph. What is its mean speed over the entire distance? [☞P 21(8)]
12. Show that the trajectory of an object thrown at a certain angle with the horizontal is a parabola. [☞P 24(13)]
13. Mention the methods used to decrease friction. [☞P 27(19)]
14. Distinguish between centre of mass and centre of gravity. [☞P 30(24)]
15. Define angular velocity(ω). Derive $v=r\omega$. [☞P 31(27)]
16. What is a geostationary satellite? State its uses. [☞P 33(32)]
17. Describe the behaviour of a wire under gradually increasing load. [☞P 34(34)]
18. Explain conduction, convection and radiation with examples. [☞P 36(40)]

SECTION-C

III. Answer any TWO of the following LAQs: 2 x 8=16

19. State and prove law of conservation of energy in case of freely falling body. [☞P 12(1)]

    A machine gun fires 360 bullets per minute and each bullet travels with a velocity of 600 ms^{-1}. If the mass of each bullet is 5gm, find the power of the machine- gun. [☞P 51(111)]
20. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. What is seconds pendulum? [☞P 15(4)]
21. State second law of thermodynamics. How is heat engine different from a refrigerator. [☞P 17(6)]

GUESS PAPERS

MODEL PAPER-2

JR.PHYSICS

SECTION-A

I. Answer ALL the following VSAQ: 10 x 2=20

SECTION-B

II. Answer any SIX of the following SAQs: 6 x 4=24

SECTION-C

III. Answer any TWO of the following LAQs: 2 x 8=16

GUESS PAPERS

MODEL PAPER-3

JR.PHYSICS

SECTION-A

I. Answer ALL the following VSAQ: 10 x 2=20

Ans-Page Index

1. What is the discovery of C.V. Raman ? [☞P 39(44)]
2. Why do we have different units for the same physical quantity? [☞P 40(50)]
3. If $\vec{P}=2\vec{i}+4\vec{j}+14\vec{k}$ and $\vec{Q}=4\vec{i}+4\vec{j}+10\vec{k}$ find the magnitude of $\vec{P}+\vec{Q}$. [☞P 41(57)]
4. If a bomb at rest explodes into two pieces, the pieces must travel in opposite directions. Explain. [☞P 42(62)]
5. Mention any 2 examples that obey Bernoullis theorem & justify them. [☞P 44(75)]
6. Give the expression for the excess pressure in the soap bubble in air. [☞P 45(84)]
7. Can a-substance contract on heating? Give an example. [☞P 47(95)]
8. Ventilators are provided in rooms just below the roof. Why? [☞P 46(88)]
9. What is the expression between pressure and kinetic energy of a gas molecule? [☞P 48(102)]
10. The absolute temperature of a gas is increased 3 times. What will be the increase in rms velocity of the gas molecule? [☞P 49(103)]

SECTION-B

II. Answer any SIX of the following SAQs: 6 x 4=24

11. A ball is thrown vertically upwards with a velocity of 20 ms^{-1} from the top of a multistorey building. The height of the point from where the ball is thrown in 25.0m from the ground.(a) How high will the ball rise?(b)How long will it be before the ball hits the ground. Take g = 10 ms^{-2} [Actual value of 'g' is 9.8 ms^{-2}] [☞P 22(11)]
12. Show that the maximum height reached by a projectile launched at an angle 45° is one quarter of the range. [☞P 26(15)]
13. State Newton's second law of motion. Hence derive equation of motion F=ma. [☞P 28(21)]
14. State and prove the principle of conservation of angular momentum. [☞P 30(26)]
15. Find the centre of mass of three particles at the vertices of an equilateral triangle. The masses of the particles are 100g, 150g and 200g respectively. Each side of the equilateral triangle is 0.5m long. [☞P 52(115)]
16. What is orbital velocity? Obtain an expression for it. [☞P 32(29)]
17. Define strain energy and derive the equation for the same. [☞P 35(36)]
18. Pendulum clocks generally go fast in winter and slow in summer. Why? [☞P 37(42)]

SECTION-C

III. Answer any TWO of the following LAQs: 2 x 8=16

19. What are collisions? Explain the possible types of collisions? Develop the theory of one dimensional elastic collision. [☞P 14(3)]
20. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. What is seconds pendulum? What is the length of a simple pendulum, which ticks seconds? [☞P 15(4)] [☞P 52(117)]
21. State second law of thermodynamics. How is heat engine different from a refrigerator. [☞P 176]

GUESS PAPERS

MODEL PAPER-4

JR.PHYSICS

SECTION-A

I. Answer ALL the following VSAQ: 10 x 2=20

Ans-Page Index

1. What is the contribution of S. Chandra Sekhar to physics ? [☞P 39(45)]
2. Distinguish between Accuracy and Precision. [☞P 40(48)]
3. Two forces of magnitudes 3 units and 5 units act at 60° with each other. What is the magnitude of their resultant? [☞P 41(54)]
4. What is inertia ? What gives the measure of inertia ? [☞P 42(60)]
5. Define Viscosity. What are it's units and dimensions? [☞P 45(80)]
6. What is magnus effect? [☞P 45(82)]
7. State Newton's law of cooling. [☞P 47(91)]
8. Distinguish between heat and temperature. [☞P 46(86)]
9. Define mean free path. [☞P 48(100)]
10. Pressure of an ideal gas in container is independent of shape of the container-explain [☞P 49(104)]

SECTION-B

II. Answer any SIX of the following SAQs: 6 x 4=24

11. A ball is dropped from the roof of a tall building and simultaneously another ball is thrown horizontally with some velocity from the same roof. Which ball lands first? Explain your answer. [☞P 22(10)]
12. Two balls are projected from the same point in directions 30° and 60° with respect to the horizontal. What is the ratio of their initial velocities if they (a) attain the same height? (b) have the same range? [☞P 26(16)]
13. Define the terms momentum and impulse. State and explain the law of conservation of momentum. Give example. [☞P 29(23)]
14. Define angular velocity(ω). Derive $v=r\omega$. [☞P 31(27)]
15. Distinguish between centre of mass and centre of gravity. [☞P 30(24)]
16. State Kepler's laws of planetary motion. [☞P 33(31)]
17. Define stress and explain the types of stress. [☞P 34(35)]
18. Write short notes on Triple point of water [☞P 36(39)]

SECTION-C

III. Answer any TWO of the following LAQs: 2 x 8=16

19. State and prove law of conservation of energy in case of freely falling body. [☞P 12(1)]
    A pump is required to lift 600 kg of water per minute from a well of 25 m deep and to eject it with speed of 50 ms^{-1}. Calculate the power required to perform the above task. [☞P 51(112)]
20. Define simple harmonic motion. Show that the motion of (point) projection of a particle performing uniform circular motion, on any diameter, is simple harmonic. [☞P 16(5)]
21. Explain reversible and irreversible processes. Describe the working of Carnot engine. Obtain an expression for the efficiency. [☞P 18(7)]

GUESS PAPERS

MODEL PAPER-5

JR.PHYSICS

Ans-Page Index

SECTION-A

I. Answer ALL the following VSAQ: **10 x 2=20**

1. What is the discovery of C.V. Raman ? [☞P 39(44)]
2. What is dimensional analysis? [☞P 40(52)]
3. If $|\vec{a}+\vec{b}|=|\vec{a}-\vec{b}|$ then what is the angle between $\vec{a}$ and $\vec{b}$? [☞P 41(56)]
4. Can the coefficient of friction be greater than one? [☞P 42(65)]
5. Define average pressure. Mention it's unit and dimensional formula. Is it a scalar or a vector? [☞P 44(79)]
6. Give the expression for the excess pressure in an air bubble inside the liquid. [☞P 45(85)]
7. The roof of buildings are often painted white during summer. Why? [☞P 46(89)]
8. State the conditions under which Newton's law of cooling is applicable. [☞P 47(92)]
9. State Boyle's law and Charles law. [☞P 48(98)]
10. When does a real gas behave like an ideal gas? [☞P 48(101)]

SECTION-B

II. Answer any SIX of the following SAQs: **6 x 4=24**

11. A bullet moving with a speed of 150 ms^{-1} strikes a tree and penetrates 3.5 cm before stopping. What is the magnitude of its retardation in the tree and the time taken for it to stop after striking the tree? [☞P 50(108)]
12. A force $2\vec{i}+\vec{j}-\vec{k}$ newton acts on a body which is initially at rest. At the end of 20 seconds, the velocity of the body is $4\vec{i}+2\vec{j}-2\vec{k}\ ms^{-1}$. What is the mass of the body ? [☞P 50(109)]
13. State the laws of rolling friction. [☞P 27(20)]
14. Define vector product. Explain the properties of a vector product with 2 examples. [☞P 30(25)]
15. Define angular velocity(ω). Derive $v=r\omega$. [☞P 31(27)]
16. Derive the relation between acceleration due to gravity(g) at the surface of a planet and gravitational constant(G). [☞P 33(33)]
17. Describe the behaviour of a wire under gradually increasing load. [☞P 34(34)]
18. Explain Celsius and Fahrenheit scales of temperature. Obtain the relation between Celsius and Fahrenheit scales of temperature. [☞P 37(41)]

SECTION-C

III. Answer any TWO of the following LAQs: **2 x 8=16**

19. Develop the notions of work and kinetic energy and show that it leads to work-energy theorem. [☞P 13(2)]
20. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. What is seconds pendulum? [☞P 15(4)]
21. State second law of thermodynamics. How is heat engine different from a refrigerator. [☞P 17(6)]