**SSC Model Test 2024** Subject Code: 1 2 6

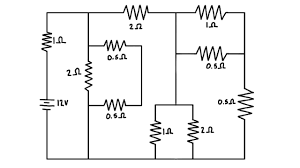
Time: 2 hour 30 min **Physics (Creative)** Full Mark : 50

[N.B. Answer total 5 questions]

Group A: Algebra

1. i) A water tap is 1 m tall. When the first drop of water is at the ground then the third drop is just to be release from the tap.

ii) a cricket ball of 150 gm is coming with a velocity of 15 m/s towards the batsman. He hit the ball with 20 m/s. The hitting time is 0.1 s.

1. What is instantaneous velocity?
2. Explain every Harmonic motion is Periodic motion.
3. According to the stem (i) where is the second water drop?
4. Find out the average Force. Discuss your answer.
5. 
6. What is Rheostat?
7. Do bends in a wire affect its electrical resistance? Explain.
8. Find out the equivalent resistance?
9. Find out the current flow of the rightmost resistor.
10. i) A 2kg box slides down a ramp a distance of two meters before it reaches the ground. The ramp has an angle of 30o. The coefficient of kinetic friction for the ramp is 0.1.

ii) Radius of a well is 5 cm and height is 10 cm.

A motor of 3 KW is activated to empty the well. It finished its job in 15 minutes.

1. What is work, energy and power?
2. What are the conditions for work done to be zero?
3. What is the work done by the normal force on the box?
4. Calculate the efficiency of the motor.
5. (i) The wavelength of a light in a medium is 400 nm and the frequency of the light is Hz.

(ii) A coin is placed at a depth of 15 cm in a beaker containing water.

If the refractive index of water is 4/3.

1. State the Snell’s formula.
2. State two effects caused by the refraction of light.
3. Find the refractive index of light in that medium.
4. Calculate the height through which the

image of the coin appears raised.

1. An electron is hanged by a rope and a proton is situated at a distance d from the proton. A plane of mass 750 kg is at rest on a runway. The required speed for take-off is 54 m/s.
2. State Newton’s second law with mathematical notations.
3. Briefly explain Newton’s law of Gravity.
4. Find the value of d for hanging the proton without any rope.
5. If th acceleration iss constant then calculate the time it takes to reach the speed.
6. 200 m iron plate is used in a train line with 4 cm spacing between every plate. Generally, temperature
7. Distance from A (2, 4) to Y-axis and the point P (k, 4) is equal. K = ?
8. Find the intersect point of the perpendicular from C to the straight-line AB.
9. If the two equation intersects each other at point Q(x,y), then draw the polygon ABCD find the area of the polygon.

Group C: Trigonometry and Probability

1. On each working day James parks his car is a parking station which has three levels. He

parks his car on a randomly chosen level. He always forgets where he has parked, so when he leaves work. he chooses a level at random and searches for his car. If his car is not on that level, he chooses a different level and continues in this way until he finds his car.

1. What is the probability that his car is on the first level he searches?
2. What is the probability that he must search all three levels before he finds his car?
3. What is the probability that on every one of the five working days in a week, his car is not on the first level he searches?
4. (i) 15 + 2 sin = 7

(ii) 7 + 3 = R

1. If R = 4, then sin = ?
2. Find the value of ( + ) from (i) if -.
3. If R = 6 and then solve

stem (ii).