

MODEL QUESTIONS – SRMJEEE(UG) - B.TECH

PART I -PHYSICS

1. One watt hour contains how many Joules?
a) 3.6×10^8 b) 3.6×10^2 c) 3.6×10^3 d) 1×10^3
2. The dimension of kinetic energy is same as that of _____
a) Force b) Pressure c) Work d) Momentum
3. A food packet is dropped from a helicopter rising upwards at a constant speed of 2m/s. How far below the helicopter the packet will be after 2 seconds? Take $g = 10\text{m/s}^2$
a) 16m b) 20m c) 24m d) 40m
4. The range of projectile when launched at an angle of 15° with the horizontal is 1.5km. What is the range of the projectile when launched at an angle of 45° to the horizontal?
a) 1.5 km b) 3.0 km c) 6.0km d) 0.75km
5. An unpolarized beam of intensity $2a^2$ passes through a Polaroid. The intensity of emergent plane polarized light is _____
a) $a^2/2$ b) $4a^2$ c) $2a^2$ d) a^2

PART II - CHEMISTRY

1. The elevation in the boiling point of a liquid is
a) dependent of both the nature and molality of the solute
b) independent of both the nature and molality of the solute
c) dependent of the nature of the solute and independent of molality of the solute
d) independent of the nature of the solute and dependent of molality of the solute
2. What is the term for the electrode where reduction reaction occurs?
a) anode b) cathode c) oxidizing agent d) reducing agent
3. In an electrochemical cell, electrons travel in which direction?
a) From the anode to the cathode through the external circuit
b) From the anode to the cathode through the porous cup
c) From the cathode to the anode through the external circuit
d) From the cathode to the anode through the porous cup
4. The compound $\text{CH}_3\text{-CH}_2\text{-NH-CH}_3$ is an example of a
a) Primary amine b) Secondary amine c) Tertiary amine d) Primary amide
5. The diazonium salts have which of the general formula?
a) $\text{RN}_2^+ \text{X}^-$ b) $\text{RN}_2^+ \text{X}_2^-$ c) $\text{RN}^+ \text{X}_2^-$ d) $\text{RN}^+ \text{X}^-$

PART III - MATHEMATICS

1. Let $X = \{a_1, a_2, \dots, a_6\}$ and $Y = \{b_1, b_2, b_3\}$. The number of functions f from X to Y such that it is onto and there are exactly three elements x in X such that $f(x) = b_1$ is
a) 75 b) 90 c) 100 d) 120
2. If the graph of $y = f(x)$ is symmetrical about lines $x = 1$ and $x = 2$, then which of the following is true?
a) $f(x + 1) = f(x)$ b) $f(x + 3) = f(x)$ c) $f(x + 2) = f(x)$ d) $f(x + 4) = f(x)$
3. For all complex numbers z of the form $z = 1 + 2ia$ where $a \in \mathbb{R}$, if $z^2 = x + iy$, then
a) $y^2 + 4x + 2 = 0$ b) $y^2 + 2x - 4 = 0$ c) $y^2 + 4x - 4 = 0$ d) $y^2 + 6x - 4 = 0$
4. If $|z - 4 + 3i| + |z + 11 - 5i| = 17$, the locus of the point ' z ' on the Argand plane is
a) an ellipse with foci $4 - 3i, 5i - 11$ b) a line
c) a segment of the line through $4 - 3i$ and $5i - 11$ d) a line, except for a segment of the line
5. Let $f(x+2) = x^3 + 2x^2 - 3x + 1$. then, $f'(3)$ equals
a) 5 b) 4 c) -6 d) 2

PART IV - BIOLOGY

1. Which plant hormone is basic in nature?
a) Auxin b) Gibberellins c) Cytokinin d) Abscisic acid
2. Delay of senescence or Richmond Lang effect is a physiological effect of
a) IAA b) CK c) GA d) C_2H_4
3. Shelf life of vegetables and cut flowers can be increased by commercial application of
a) Cytokinin b) AMO1618 c) Cyclocel d) Phosphon-D
4. In maize, hybrid vigour is exploited by
a) inducing mutations
b) bombarding the protoplast with DNA
c) crossing of two inbred parental lines
d) harvesting seeds from the most productive plants
5. 90% of blood from auricles enter into ventricles during
a) Auricular Systole
b) Auricular Diastole
c) Ventricular Systole
d) Ventricular Diastole

PART V - ENGLISH

1. "Your parents were not anxious enough to have you learn. They preferred to put you to work on a farm or at the mills, so as to have a little more money. And I? I've been to blame also. Have I not often sent you to water my flowers instead of learning your lessons?" (*This passage best expresses the writer's:*)
a) feeling of anger b) sense of guilt c) state of confusion d) feeling of fright
2. MR LAMB: I should say....to look at it.... I should say, you got burned in a fire.
DERRY: Not in a fire. I got acid all down that side of my face and it burned it all away. It ate my face up. It ate me up. And now it's like this and it won't ever be any different.
(*Derry's statement portrays a feeling of:*)
a) Exhaustion and helplessness b) Anger and revenge c) Self-pity and acceptance d) Rejection and regret
3. "You must have patience, my little girl," said the father. (*The indirect speech of this sentence is:*)
a) The father advised his daughter that she should have patience
b) The father told his daughter that she must have patience
c) The father ordered his daughter to have patience
d) The father says that she should have patience
4. "Besides, the whole school seemed so strange and solemn. But the thing that surprised me most was to see, on the back benches that were always empty, the village people sitting quietly like ourselves."
(*The underlined word means:*)
a) By the side of b) In addition to that c) On account of that d) In spite of that
5. "It seemed a long way down. Those nine feet were more like ninety, and before I touched bottom my lungs were ready to burst. But when my feet hit bottom I summoned all my strength and made what I thought was a great spring upwards." (*The passage above describes the author's experiment with:*)
a) Flying b) Skating c) Swimming d) Sailing

PART VI -APTITUDE

1. The number M39048458N is divisible by 11 and 8, where M, N are single digit numbers.
Then what is the value of M, N?
a) 7, 8 b) 8, 6 c) 6, 4 d) 5, 4
2. What is the average of first 18 multiples of 6?
a) 18 b) 6 c) 72 d) 57
3. If the radius of a sphere is doubled, what is the percentage change in its volume?
a) 800% increase b) 800% decrease c) 700% increase d) No change
4. The cost price of a pen is Rs.200 and its selling price is Rs.250. Find its profit %.
a) 20 b) 25 c) 50 d) 100
5. If a and b are the roots of the quadratic equation $x^2-2x+7=0$, what will be the value of a^2+b^2 ?
a) 20 b) 25 c) 50 d) 100