



Dr. A S Rao Awards Council  
MODEL PAPERS FOR S T S E

**MODEL PAPER – 30<sup>TH</sup> SCIENCE TALENT SEARCH EXAMINATION (30-STSE)**

**NOTE:- Only 5 questions in subject are given as example. In actual paper there will be 25 Questions in each subject. Each Question may have more than one Correct answer. The student has to identify all the correct answers(if there are). No marks will be given for partial answers. For example, if a question has A,C,D choices as correct answers and if a student answers only A and C or A and D or C and D or A or C or D etc., no marks will be awarded to that question.**

**9<sup>th</sup> CLASS - MODEL PAPER**

**MATHS**

- 1) From a point  $O$ ,  $OD, OE$  and  $OF$  are drawn perpendiculars to the sides  $BC, CA$  and  $AB$  respectively of a triangle  $ABC$ . Then

$$BD^2 - DC^2 + CE^2 - EA^2 + AF^2 - FB^2 =$$

- A) 0  
B)  $2(AB + BC + CA)$   
C)  $2(OA + OB + OC)$   
D) 1

- 2) If  $A = \begin{bmatrix} 1 & 2 \\ 2 & x \end{bmatrix}$  and  $f(x) = x^2 - 2x - 3$  and  $f(A) = 0$  then  $x =$

- A) -1  
B) 1  
C) 2  
D) 3

- 3) There are two circles with radii 2 units and 9 units and their centres are A and B.

If  $AB = 13$  and C is centre of another circle with radius  $r$  and touching the first two circles externally and  $\angle ACB = 90^\circ$ ,  $r =$

- A) 3 or 14  
B) 3  
C) 3 or 9  
D) 4 or 3

- 4) If  $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ ,  $B = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$  then

- A)  $AB \neq BA$   
B)  $AB = 2BA$   
C)  $2AB = B^T \cdot A^T$   
D)  $A^T \cdot B = B^T \cdot A$

- 5) The bisector of base angles of a triangle can never be

- A) a right angle  
B) less than  $90^\circ$   
C) greater than  $90^\circ$   
D)  $30^\circ$

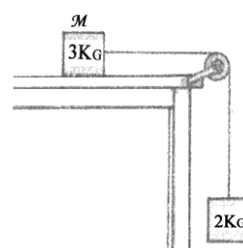


## PHYSICS

- 6) A person of height 2 m standing under a street lamp of height 6 m above the ground starts running with a constant speed of  $5 \text{ ms}^{-1}$  in a straight line. The light from the lamp falling on the person casts the shadow of the person. Then
- A) The distance covered by the person in 2 s is 10 m  
B) The distance covered by the shadow of the person in 2 s is 15 m.  
C) The velocity of the shadow is  $7.5 \text{ ms}^{-1}$ .  
D) The velocity of the shadow is  $5.0 \text{ ms}^{-1}$ .
- 7) If a car completes a quarter of a circular track of radius 100 m in 10 s with uniform speed, then it's
- A) displacement in that time is 100 m  
B) displacement is that time is  $100\sqrt{2}$  m  
C) average velocity during that time is  $10\sqrt{2} \text{ ms}^{-1}$   
D) average velocity during that time is  $10 \text{ ms}^{-1}$
- 8) In the state of equilibrium
- A) Net force is zero.  
B) Body at rest will continue to be in its state of rest.  
C) Body moving with uniform velocity will continue to be in its state of uniform velocity.  
D) Body with linear momentum  $\vec{p}$  will continue to have the same momentum  $\vec{p}$ .
- 9) Two block of masses 2 kg and 3 kg are attached to the ends of an inextensible and mass less string. The string runs over a pulley which is fixed to a rigid support ( $g = 10\text{ms}^{-2}$ )
- A) Acceleration of the system of 2 kg and 3 kg blocks is  $2 \text{ ms}^2$   
B) Acceleration of the system of 2 kg and 3 kg blocks is  $5 \text{ ms}^2$   
C) Acceleration of the system of 2 kg and 3 kg blocks is  $3.3 \text{ ms}^2$   
D) Tension in the string is 24 N.
- 10) For the system shown in to figure, what mass 'm' is to be placed on 3 kg mass so that the system is to have an acceleration on of  $2 \text{ ms}^{-2}$  assuming that there is no friction

- A) 2kg  
D) 3kg

B) 5kg



C) 10kg



## CHEMISTRY

11) Which one of the following statements is **correct** regarding diffusion?

- A) Diffusion of solids is faster than that of gases
- B) Carbon dioxide diffuses from blood into lungs
- C) Oxygen diffuses from blood into lungs
- D) Diffusion of gases is higher than that of liquids

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12) The rate of evaporation will be increased with

- A) increase in temperature
- B) decrease in surface area
- C) Increase in wind speed
- D) decrease in humidity

13) Identify the correct statements:

- A) Churning of milk separates out cream
- B) Mixtures are always homogeneous
- C) Churning makes cream to settle to the bottom
- D) Heavier particles settle to the bottom on centrifugation

14) In which of the following colloid type the dispersed phase is solid?

- A) Emulsion
- B) sol
- C) gel
- D) aerosol

15) The postulates of Dalton's Atomic theory are:

- A) Matter consists of indivisible particles called Atoms
- B) Atoms of an element have different masses
- C) Atoms of different combine to give compounds
- D) Atoms are neither created nor destroyed in a chemical reaction



**BIOLOGY**

16).Skeletal muscle is

- A) Non – striated muscle
- B) Striated muscle
- C) Voluntary muscle
- D) Involuntary muscle.

17).Which of the following groups include only mammals?

- A) Bat, Dolphin, Monkey
- B) Kangaroo, Man, Bat
- C) Parrot, Bat, Dolphin
- D) Man, Dolphin, Pigeon

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18). Open circulatory system is present in

- A) Earthworm
- B) Cockroach
- C) Leech
- D) Housefly

19). Which are the features of annelids?

- A) Bilaterally symmetrical
- B) Triploblastic
- C) True body cavity
- D) Pseudocoelom

20). Land pollution is mainly caused by

- A) Industrial waste
- B) Reforesting
- C) Pyrolysis
- D) Mixed cropping

**KEY FOR MODEL PAPER**

Q.No	Answer	Q.No	Answer	Q.No	Answer	Q.No	Answer
1	A	6	A,B,C	11	B,D	16	B,C
2	B	7	B,C	12	A,C,D	17	A,B
3	B	8	A,B,C,D	13	A,D	18	B,D
4	D	9	A,D	14	B,D	19	A,B,C
5	A	10	B	15	A,C,D	20	B,D



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