

# SMART SOCIETY INTERNATIONAL SCIENCE OLYMPIAD (SSISO)



## Organized by

Department of Basic Science and Humanities  
INSTITUTE OF ENGINEERING & MANAGEMENT,  
IEM-UEM GROUP and SMART SOCIETY, USA

**TOTAL QUESTIONS: 50**

**DURATION: 1 HOUR**

## INSTRUCTIONS TO THE CANDIDATES:

1. The question booklet is divided into 3 sections.  
Section A – Logical Reasoning (10 Questions)  
Section B - Science (15 Questions)  
Section C – Advanced Science (25 Questions)
2. In section A, each question carries 1 mark. In Section B, each question carries 1 mark. In section C, each question carries 3 marks.
3. All questions are compulsory. There is no negative marking. Use of a calculator is not permitted.
4. There is only one correct answer.
5. To mark your choice of correct answers, darken the circles on the OMR sheet. For this purpose, use HB pencil or black ball point pen.
6. Rough work should be done in the blank space provided at the end of the booklet.
7. Return the OMR sheet to the invigilator at the end of examination.
8. Please fill in your personal details in the space provided below.

NAME: .....

SCHOOL NAME: .....

CONTACT DETAILS OF GUARDIAN: .....

## SECTION A

### LOGICAL REASONING

1. If DELHI is coded as 73541 and CALCUTTA as 82589662. How can CALICUT be coded?
  - a) 8251896
  - b) 8915652
  - c) 26698526
  - d) 6981528
2. If 50% of  $(X-Y) = 30\%$  of  $(X+Y)$ , then what percentage of X is Y?
  - a) 30%
  - b) 35%
  - c) 25%
  - d) 50%
3. Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle." How is the boy related to the girl?
  - a) Brother
  - b) Nephew
  - c) Uncle
  - d) Son-in-law
4. Apple, Grape, Orange
  - a) Vegetable
  - b) Fruits
  - c) Stems
  - d) Oats
5. Clutch, Brake, Horn
  - a) Car
  - b) Scooter
  - c) Accident
  - d) Steering
6. 120, 99, 80, 63, 48, ?
  - a) 35
  - b) 38
  - c) 39
  - d) 40
7. Read the following sentences and choose the correct option.
  - I. Standard of living among the middle class society is constantly going up since part of few years.
  - II. Indian Economy is observing remarkable growth.
  - a) Statement I is the cause and statement II is its effect.
  - b) Statement II is the cause and statement I is its effect.
  - c) Both the statements I and II are independent causes.
  - d) Both the statements I and II are effects of independent causes.
8. I. The meteorological Department has issued a statement mentioning deficient rainfall during monsoon in many parts of the country.  
II. The Government has lowered the revised estimated GDP growth from the level of earlier estimates
  - a) If statement I is the cause and statement II is its effect.
  - b) If statement II is the cause and statement I is its effect.
  - c) If both the statements I and II are independent causes.
  - d) If both the statements I and II are effects of independent causes.
9. Children are in pursuit of a dog whose leash has broken. James is directly behind the dog. Ruby is behind James. Rachel is behind Ruby. Max is ahead of the dog walking down the street in the opposite direction. As the children and dog pass, Max turns around and joins the pursuit. He runs in behind Ruby. James runs faster and is alongside the dog on the left. Ruby runs faster and is alongside the dog on the right. Which child is directly behind the dog?
  - a) James
  - b) Ruby
  - c) Rachel
  - d) Max
10. If in a certain language, MADRAS is coded as NBESBT, how is BOMBAY coded in that code?
  - a) CPNCBZ
  - b) CBZNPB
  - c) ZPNCBZ
  - d) TBCPNT

## SECTION B

## SCIENCE

11. A force of 10 N is applied to move a box a distance of 5 meters. What is the work done?
- a) 20 J                      b) 50 J  
c) 100 J                    d) 200 J
12. A car is moving with a speed of 20 m/s. What is the kinetic energy of the car if its mass is 1000 kg?
- a) 200,000 J              b) 400,000 J  
c) 500,000 J              d) 600,000 J
13. If the velocity of a 2 kg object is doubled, its kinetic energy increases by:
- a) 2 times                  b) 4 times  
c) 6 times                  d) 8 times
14. If the height of an object is doubled, its potential energy will:
- a) Remain the same  
b) Double  
c) Quadruple  
d) Increase by 8 times
15. The sum of kinetic energy and potential energy is
- a) Electrical energy  
b) Mechanical Energy  
c) Chemical Energy  
d) Physical Energy
16. When two identical bodies are in motion, the body with a higher velocity has
- a) Lower Kinetic Energy  
b) Higher Kinetic Energy  
c) Same  
d) cant determine
17. What does the slope of the velocity-time graph give?
- a) Acceleration          b) Velocity  
c) Jerk                      d) Distance
18. The linear momentum of an object is 250 g cm/s. If the velocity of the object is 5 m/s, then the mass of the object is
- a) 0.5 g                    b) 5 g  
c) 0.5 kg                  d) 50 g
19. Which non-metal is the most reactive?
- a) Flourine                b) Chlorine  
c) Neon                    d) Nitrogen
20. Which of the following is the most ductile element?
- a) Silver                    b) Gold  
c) Titanium                d) Mercury
21. Plasma consists of \_\_\_\_\_ particles.
- a) Energetic                b) Solid  
c) Liquid                    d) Gas
22. A soil sample has adequate water holding capacity but deficient in phosphorus and potassium. Which of these would improve the quality of crops grown in the field?
- a) removing weeds  
b) Applying fertilizers  
c) Modifying irrigation system  
d) Growing different crops at the same time.
23. How many chromosomes should be there in a healthy (human) cell.
- a) 23                        b) 46  
c) 92                        d) 64
24. The gas usually filled in the electric bulb is
- a) Nitrogen                b) Neon

- c) Argon                      d) Both a and c
25. The motion of the Earth on its axis is known as
- a) Rotation                      b) Translation
- c) Oscillatory                      d) Random

## SECTION C

### ADVANCED SCIENCE

26. A police car moves towards a stationary observer, emitting a sound of frequency 1000 Hz. The frequency heard by the observer will be:
- a) 1000 Hz
- b) Greater than 1000 Hz
- c) Less than 1000 Hz
- d) Zero
27. The frequency of a sound wave is 500 Hz, and its wavelength is 2 meters. What is the speed of sound?
- a) 1000 m/s                      b) 500 m/s
- c) 250 m/s                      d) 2000 m/s
28. The phenomenon of sound bending around obstacles is known as:
- a) Diffraction                      b) Reflection
- c) Refraction                      d) Interference
29. If the amplitude of a sound wave is doubled, what happens to its intensity?
- a) The intensity remains unchanged.
- b) The intensity doubles.
- c) The intensity quadruples.
- d) The intensity decreases by half.
30. A sound wave of frequency 1000 Hz travels in air at a speed of 330 m/s. What is its wavelength?
- a) 0.33 m                      b) 3.3 m
- c) 0.0033 m                      d) 3 m
31. The gravitational constant G has the dimensions of: Options:
- a)  $[M^{-1}L^3T^{-2}]$                       b)  $[M^1L^3T^{-2}]$
- c)  $[M^1L^2T^{-2}]$                       d)  $[M^1L^2T^{-3}]$
32. The third law of motion stipulates that for every action, there exists an equal and opposite reaction. What does this axiom entail?
- a) The reaction force is always equal in magnitude.
- b) The action and reaction forces act on different objects.
- c) The reaction force always acts in the opposite direction.
- d) All of the above
33. When a force of 10 N is applied to an object weighing 2 kg, what would be the resultant acceleration of the object?
- a) 20 m/s<sup>2</sup>.                      b) 5 m/s<sup>2</sup>.
- c) 2 m/s<sup>2</sup>.                      d) 0.2 m/s<sup>2</sup>.
34. Who invented the cell?
- a) Thomas Eddison
- b) Issac Newton
- c) Robert Hooke
- d) Marcopolo
35. Which of the following steps Moon does not appear at all?
- a) New Moon                      b) Full Moon
- c) Crecent                      d) Gibbous Moon
36. What is measured by the Richter scale?
- a) Map Distance                      b) Flood level
- c) Earthquake                      d) Tide Level
37. pH value of the blood is
- a) 7.0                      b) 7.4

- c) 4.6                      d) 6.8                      d)  $6.022 \times 10^{23}$  atoms of H = 1g of hydrogen atoms
38. What is the name of instrument which is used to determine the atmospheric pressure?
- a) Barometer              b) Altimeter  
c) Press meter            d) Tachometer
39. What is the name of the instrument which is generally used to measure altitudes in aircrafts?
- a) Barometer              b) Altimeter  
c) Press meter            d) Tachometer
40. What is the name of the acid which is present in lemon?
- a) Citric Acid              b) Acetic Acid  
c) Salicylic Acid        d) Methanoic Acid
41. What is the name of the chemical which is used as a fixer in photography?
- a) Sodium Thiosulphate  
b) Silver Chloride  
c) Indium Oxide  
d) Uranium phosphide
42. The colour of the vapours formed on sublimation of iodine solid is
- a) Purple (violet)        b) Colourless  
c) Yellow                  d) Orange
43. The atomicity of  $K_2Cr_2O_7$  is
- a) 9                          b) 11  
c) 10                        d) 12
44. Which of the following is a wrong Combination?
- a)  $6.022 \times 10^{23}$  molecules of oxygen = 32g of oxygen  
b)  $6.022 \times 10^{23}$  ions of sodium = 23g of sodium  
c)  $6.022 \times 10^{23}$  atoms of C = 24g of carbon
45. What will be the molecular mass of Ethanol?
- a) 46 u                      b) 34 u  
c) 34 g                      d) 46 g
46. 1 carat of diamond is equal to
- a) 200 mg                  b) 200 g  
c) 100 mg                  d) 100 g
47. The isotope used to remove the brain tumours and treatment of cancer is
- a) U-235                    b) Na-24  
c) Iodine                    d) Co-60
48. Intercalated disc is the specific characteristic of:
- a) Smooth muscle fibres  
b) Cardiac muscle fibres  
c) Skeletal muscle fibres  
d) All of the above
49. Serum differs from blood in:
- a) Lacking globulins  
b) Lacking albumins  
c) Lacking clotting factors  
d) Lacking antibodies
50. A person named George has bacterial infection. Which part of the cell will help him to eliminate bacteria from his body?
- a) Vacuoles, as they uptake any materials and store it  
b) Vacuoles, as they can expel substances out of the cell  
c) Lysosomes, as they have hydrolytic enzymes to breakdown foreign materials  
d) Lysosomes as they can digest their own cell.

# Space of rough work