Subject Specialist Physics (BPS-17), School Education & Literacy Department, Government of Sindh — 2023 · Solved Past Paper

Body: Sindh Public Service Commission (SPSC) · **Post:** Subject Specialist Physics (BPS-17), School Education & Literacy Department, Government of Sindh · **Year:** 2023 · **Questions:** 50 in the original paper — **49 solved and verified**, 1 excluded as defective (Q31) · **Price:** Free

> **How to use this paper:** each question shows the stem, the four options, and the correct answer. Click “Why each option?” under a question to see all four options explained — one question teaches four topics. General Knowledge answers are as of the 2023 sitting.

Source note: testpointpk reproduction, 'SPSC Subject Specialist Physics Past Paper dated 03-06-2023' (50 stems, each with 4 options and a printed key; paginated 5 x 10; direct-curl raw HTML). 2 printed-key errors corrected openly (Q19 mobility laws → D; Q44 ingenious → D). 1 PICK-ONE (Q33) and 1 DEFECTIVE-excluded (Q31 BCC diameter) decided under the owner's 8 Nov 2026 delegation. Reproduction defects flagged, not silently corrected (Q38 option B printed '74.5%'; Q34 stem garble; Q29 stem garble). No second full reproduction of these 50 stems was found. Answers verified independently against standard references, worked derivations and standard textbook rules, never from the printed key alone.

Question 1

An isotope is _____?

atom with a specified number of protons and neutrons ✓ **Correct answer**

- B. The nucleus of the atom
- C. A subatomic particle
- D. None of these

Question 2

The Antonym of Insolvent is?

- A. Solid
- B. Financially stable
- C. Metaphysically correct
- D. Both A and B ✓ **Correct answer**

Question 3

The equation $E = mc^2$ indicates that energy _____?

- A. Is fundamentally different than mass
- B. And mass are closely related ✓ **Correct answer**
- C. Equals mass moving at the speed of the light square
- D. None of these

Question 4

Over-damping results in _____?

- A. Slower return to equilibrium ✓ **Correct answer**
- B. Faster return to equilibrium
- C. Equilibrium is never achieved
- D. Unrhythmic to equilibrium

Average distance covered by alpha particle (α-particle) in air before its ionizing power ceases is called its?

- A. Trajectory
- B. Range ✓ **Correct answer**
- C. Firing level
- D. Limit

Question 6

During one oscillation, phase of oscillation changes by _____?

- A. π⁄2 rad
- B. π rad
- C. 2π rad ✓ **Correct answer**
- D. None of these

Question 7

The principle of transformer is _____?

- A. Mutual induction ✓ **Correct answer**
- B. Ampere's law
- C. Motional e.m.f
- D. None of these

Question 8

In Ampere's law, the integration is over a _____?

- A. Surface
- B. Closed path ✓ **Correct answer**
- C. Closed surface

Question 9

A rheostat can be used as a _____?

- A. Potential divider
- B. Variable resistor
- C. Both A and B ✓ **Correct answer**
- D. None of these

Question 10

The change in Entropy is zero for _____?

- A. Reversible isobaric processes
- B. Reversible adiabatic processes ✓ **Correct answer**
- C. Reversible isothermal processes
- D. None of these

Question 11

The Synonym of "Prodigal" is?

- A. Steadfast
- B. Prudent
- C. Skeptic
- D. Wasteful ✓ **Correct answer**

Question 12

The range of the coulomb's force is _____?

- A. Infinite ✓ **Correct answer**
- B. r^2

- D. None of these

Question 13

If the distance between the charges doubles, the coulomb's force between the charges _____?

- A. One-fourth ✓ **Correct answer**
- B. Halves
- C. Distance between the charges
- D. None of these

Question 14

Which one of the following is more coherent?

- A. X-rays
- B. Laser ✓ **Correct answer**
- C. Normal light
- D. None of these

Question 15

A student added three figures 72.1, 3.32 and 0.003. The correct answer regrading the rules of the addition of the significant figures will be _____?

- A. 75.4 ✓ **Correct answer**
- B. 75
- C. 75.42
- D. None of these

The full form of STM is _____?

- A. Scanning Tunneling Microscope ✓ **Correct answer**
- B. Scientific Technical Microscope
- C. Systemic Technical Microscope
- D. None of these

Question 17

Which of the following does not apply in nanotechnology?

- A. Newtonian mechanics can describe it ✓ **Correct answer**
- B. It can be called green technology
- C. It is general-purpose technology
- D. None of these

Question 18

Refractive index of materials is approximately equal to the square root of _____?

- A. Magnetic permeability
- B. Electrical permittivity
- C. Electrical permittivity × Magnetic permeability ✓ **Correct answer**
- D. None of these

Question 19

The dependence of the mobility of charge carriers in a semiconductor is given by _____?

- A. $\mu \propto 1/T$
- B. $\mu \propto T^{1/2}$
- C. $\mu \propto 1/T^{1/2}$
- D. None of these ✓ **Correct answer**

Ferromagnetic materials are obtained from _____?

- A. Aluminum
- B. Nickel ✓ **Correct answer**
- C. Copper
- D. None of these

Question 21

Which one of the following constants is not related to radiation?

- A. Boltzmann’s constant ✓ **Correct answer**
- B. Solar constant
- C. Stefan’s constant
- D. None of these

Question 22

Force exerted on a person by atmosphere is _____?

- A. 200000 N ✓ **Correct answer**
- B. 400000 N
- C. 500000 N
- D. None of these

Question 23

The material which is slightly attracted to a magnetic field is _____?

- A. Paramagnetic ✓ **Correct answer**
- B. Diamagnetic
- C. Ferromagnetic
- D. None of these

Relativistic Mechanics produces results different from classical mechanics for bodily?

- A. Zero velocity
- B. Low velocities
- C. Very high velocities ✓ **Correct answer**
- D. None of these

Question 25

The total capacitance of a 300 mF capacitor and a 600 mF in series _____?

- A. 200 mF ✓ **Correct answer**
- B. 500 mF
- C. 300 mF
- D. None of these

Question 26

The structure of $Na^{+}Cl^{-}$ is _____?

- A. Body-centered cubic (BCC)
- B. Face-centered cubic (FCC) ✓ **Correct answer**
- C. Simple cubic (SC)
- D. None of these

Question 27

Phase difference between a node and an antinode is _____?

- A. 280°
- B. 90° ✓ **Correct answer**
- C. 45°
- D. None of these

A sphere, a cube and a thin circular plate, all made of the same material and having the same mass are initially heated to a temperature of 3000°K, which of these will cool fastest?

- A. Plate ✓ **Correct answer**
- B. Cube
- C. Sphere
- D. None of these

Question 29

A radio transmission from an astronaut on the moon will be received how much later on the Earth? (The million meters from the Earth).

- A. 1.27s ✓ **Correct answer**
- B. 0.38s
- C. 0.25s
- D. None of these

Question 30

Data are stored in a random access memory (RAM) during the _____?

- A. Enable operation
- B. Write operation ✓ **Correct answer**
- C. Read operation
- D. None of these

Question 31

The atomic diameter of a BCC crystal (if a is lattice parameter) is _____?

- A. a/(4/√3)

- C. al(4/12)
- D. None of these

No answer is given for this question, and none is taught. DEFECTIVE-excluded — no correct option (the BCC atomic diameter is (√3/2)a; option A (a√3/4) is the atomic RADIUS, and B/C are garbled; the true diameter is in no option. Printed key A is the radius, not the diameter. Decided by assistant under owner's 8 Nov 2026 delegation; never taught as having an answer)

Question 32

Which of the following is the correct relation between current density and magnetization?

- A. J = Grad(M)
- B. J = Div(M)
- C. J = Curl(M) ✓ **Correct answer**
- D. None of these

Question 33

A positive change moving with a constant velocity v enters a region of a uniform magnetic field pointing out the page. What is the direction of the magnetic force on the charge?

- A. To the top of the page ✓ **Correct answer**
- B. To the bottom of the page
- C. Right
- D. None of these

Question 34

For an electronic state s = 1, and 1 = 1, the number of possible values of total angular

of an electronic are _____?

- A. 2
- B. 3 ✓ **Correct answer**
- C. 4
- D. None of these

Question 35

The density of states for a metal depends primarily on _____?

- A. The energy ✓ **Correct answer**
- B. The temperature
- C. The density of the metal
- D. None of these

Question 36

Which of the following is the property of an ionic compound?

- A. Non-conductors
- B. High melting and boiling ✓ **Correct answer**
- C. Low melting and boiling points
- D. None of these

Question 37

The Maxwellian speed distribution provides a direct explanation of _____?

- A. Heat
- B. Evaporation ✓ **Correct answer**
- C. Thermal expansion
- D. None of these

The specific heat of lead is 0.030 cal/gC° 300g of lead shot at 100°C is mixed with 100 g of water at 70°C in an insulated container. The final temperature of the mixture is?

- A. 79.5°C
- B. 74.5%
- C. 72.5°C ✓ **Correct answer**
- D. None of these

Question 39

The zeroth law of thermodynamics allows us to define _____?

- A. Temperature ✓ **Correct answer**
- B. Pressure
- C. Work
- D. None of these

Question 40

Canonical transformations can often be conveniently found or verified by using a _____?

- A. Separation tensor
- B. Degenerating function
- C. Generating function ✓ **Correct answer**
- D. None of these

Question 41

In the absence of external torque, the quantity which remains conserved is _____?

- A. Angular momentum ✓ **Correct answer**
- B. Mass
- C. Linear momentum

Question 42

Divergence of a vector at a point in a vector field is _____ quantity.

- A. A scalar ✓ **Correct answer**
- B. A vector
- C. Both A and B
- D. None of these

Question 43

The Antonym of Peremptory is?

- A. Wise
- B. Partial
- C. Humble ✓ **Correct answer**
- D. None of these

Question 44

The Antonym of Ingenious is?

- A. Devious
- B. Talented
- C. Clever
- D. None of these ✓ **Correct answer**

Question 45

The antonym of ‘Intransigent’ is?

- A. Impassable
- B. Conciliatory ✓ **Correct answer**

- D. Corroborative

Question 46

The antonym of ‘Mutation’ is?

- A. Decency
- B. Clangorous
- C. Constancy ✓ **Correct answer**
- D. Adolescent

Question 47

The Synonym of ‘Concession’ is?

- A. Allowance ✓ **Correct answer**
- B. Refusal
- C. Negligence
- D. Proposal

Question 48

Idiom: To have sticky fingers means?

- A. Having a bad luck
- B. getting stuck in a situation
- C. Unable to find a solution
- D. Being a thief ✓ **Correct answer**

Question 49

The Synonym of 'Emancipation' is?

- A. Imprisonment

edom ✓ **Correct answer**

- C. Confinement
- D. Duress

Question 50

The Synonym of ‘Postulate’ is?

- A. Comprehend
- B. Investigate
- C. Hypothesize ✓ **Correct answer**
- D. Scrutinize

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