PHY 1104 – EXPERIMENTAL PHYSICS
LAST YEAR EXAMISTION SECOND SEMESTER EXAMS
MAY BE IT WILL HELP, BUT DON'T RELY ONLY ON THIS… READ YOUR NOTE AS WELL.

1. What is the name of the force that opposes the motion of the block as it starts to move up the inclined plane?
(a) Normal force (b) Frictional force
(c)Gravity(d) Applied force
Answer: (b) Frictional force
Explanation: Friction resists relative motion between two surfaces in contact.

2. If the mass of the scale pan was found to be 31.1 g, and a 10 g mass was added to the scale pan which just makes the block start to move. What is the weight that just makes the block start to move? If g = 10 m/s²
(a) 0.411 N (b) 0.0411 N (c) 0.0041 N (d) 4.11 N
Answer: (a) 0.411 N
Explanation: Total mass = 41.1 g = 0.0411 kg → W = mg = 0.0411 × 10 = 0.411 N.

3. What is the purpose of the meter bridge experiment?
(a) To determine the specific heat capacity of a metal
(b) To study the behavior of a capacitor
(c) To investigate the resistance of a resistor
(d) To measure the resistance of a wire
Answer: (d) To measure the resistance of a wire
Explanation: Meter bridge works on Wheatstone bridge principle to determine unknown resistance.

4. Two resistors, R1 and R2, are connected in series. What is the effective resistance (Reff) of the circuit?
(a) Reff = R1 + R2 (b) Reff = R1 × R2 (c) Reff = R1 – R2 (d) Reff = R1 / R2
Answer: (a) Reff = R1 + R2
Explanation: In series, resistances simply add.

5. Why is it important to stir the mixture thoroughly during the experiment?
(a) To ensure uniform temperature throughout (b) To ensure proper mixing of solute
(c) To increase accuracy (d) To measure accurately
Answer: (a) To ensure uniform temperature throughout
Explanation: Stirring prevents temperature gradient in calorimeter experiments.

6. What happens to the temperature of the mixture when hot metal and water are mixed?
(a) It increases rapidly (b) It decreases rapidly
(c) It remains constant (d) It changes slowly
Answer: (d) It changes slowly
Explanation: Heat exchange happens gradually until equilibrium is reached.

7. What is the advantage of using a burette with a narrow tube?
(a) It increases flow rate (b) It decreases flow rate
(c) It allows more accurate measurements (d) It makes experiment faster
Answer: (c) It allows more accurate measurements
Explanation: Narrow tube improves precision in volume measurement.

8. What is the relationship between the flow rate and the time taken for water to flow from burette?
(a) Direct proportion (b) Inverse proportion (c) No relationship (d) Exponential relationship **Answer: (b) Inverse proportion**
Explanation: Greater flow rate means less time, hence inverse.

9. What happens to the galvanometer needle (pointer) when the bridge is balanced?
(a) It deflects to one side (b) It deflects to the other side (c) It remains steady at zero
(d) It oscillates back and forth
Answer: (c) It remains steady at zero
Explanation: At balance point, no current flows through galvanometer.

10. If two resistors, R1 and R2, each of resistance 10 Ω, are connected in parallel, what is total resistance of the circuit?
(a) 20 Ω (b) 10 Ω (c) 5 Ω (d) 2 Ω
Answer: (c) 5 Ω Explanation: 1/Reff = 1/R1 + 1/R2 → Reff = 5 Ω.
11. What is the purpose of using a calorimeter in the experiment?
(a) To measure the temperature of the metal (b) To measure the mass of the liquid
(c) To mix the metal and water thoroughly (d) To prevent heat loss to surroundings
Answer: (d) To prevent heat loss to surroundings
Explanation: Calorimeter minimizes heat exchange with environment.
12. What is the S.I. unit of specific heat capacity?
(a) $Jg^{-1}°C^{-1}$ (b) $Jg^{-1}K^{-1}$ (c) $Jkg^{-1}°C^{-1}$ (d) $Jkg^{-1}K^{-1}$
Answer: (d) $Jkg^{-1}K^{-1}$
Explanation: SI unit is Joule per kilogram per Kelvin.
13. Which of the following is among the apparatus used in an inclined plane experiment?
(a) Stop watch (b) Metre rule (c) Calorimeter (d) Scale pan
Answer: (b) Metre rule Explanation: Used to measure distance travelled on inclined plane.
14. What is the unit of coefficient of static friction (μ)?
(a) Newton's (N) (b) Joules (J) (c) Dimensionless (d) Meters per second (m/s)
Answer: (c) Dimensionless
Explanation: μ is ratio of forces, no units.
15. One of the following is among the apparatus used in an experiment to measure the flow of water from burette:
(a) Stop watch (b) Wire (c) Calorimeter (d) Scale pan
Answer: (a) Stop watch
Explanation: Stop watch records time for water flow.
16. What is the effect of increasing the height of the water column in the burette on the flow rate?
(a) It increases flow rate (b) It decreases flow rate (c) No effect (d) None of the above
Answer: (a) It increases flow rate
Explanation: Higher head of water increases pressure, so faster flow.
17. If a given block of lead is boiling in water, what would be the temperature of water?
(a) Almost the same with water (b) Greater than water (c) Less than water (d) None of the above **Answer: (a) Almost the same with water** Explanation: Both are in thermal equilibrium.
18. The quantity of heat required to change the temperature of a unit mass of substance by 1°C is called?
(a) Specific heat capacity (b) Specific heat fusion (c) Specific heat of vaporization (d) Latent heat **Answer: (a) Specific heat capacity** Explanation: Definition of specific heat capacity.
19. Calculate resistance of a wire given L = 20.50 cm, S = 20 ohms, ρ = ?
Options: (a) 5.16 ohms (b) 4 ohms (c) 0.2 ohms (d) 2.57 ohms **Answer: (a) 5.16 ohms**
Explanation: R = ρL/A (applied values as per question).
20. A meter bridge has R = 100 Ω, balance point = 75 cm. Determine unknown resistance Rx:
(a) 85 Ω (b) 65 Ω (c) 25 Ω (d) 50 Ω
Answer: (a) 85 Ω Explanation: Using bridge balance formula, Rx/R = L1/L2.
21. The bridge is sensitive when the balance point is not near the centre of the —
(a) Galvanometer (b) Voltmeter (c) Wire (d) Resistor
Answer: (c) Wire
Explanation: A meter bridge (or Wheatstone bridge) is most sensitive when the balance point is away from extreme ends of the wire; small changes produce measurable shifts in the balance length along the wire.

22. In the flow-of-water experiment, a graph of _____ against _____ are plotted.
(a) V against t (b) H against t (c) t against H (d) t against V
Answer: (a) V against t
Explanation: Volume (or height) collected is plotted against time to determine flow rate.
23. "—" refers to the closeness of measurements to the actual or true value of the quantity.
(a) Precision (b) Accuracy (c) Uncertainty (d) All of the above
Answer: (b) Accuracy
Explanation: Accuracy measures how close a measured value is to the true value; precision measures scatter of repeated measurements.
24. Laboratory reports are to be turned in —
(a) At the end of the laboratory period
(b) One week after the laboratory period
(c) Two weeks after the laboratory period
(d) At the end of the laboratory period
25. In the flow-of-water from burette experiment the slope from the graph is 0.5 and the point on the h-axis is 10 cm at t = 15 s. Determine the intercept.
(a) 10 cm (b) 2.5 cm (c) 1 cm (d) 150 cm
Answer: (b) 2.5 cm
Explanation: Using $h = m \cdot t + c \rightarrow c = h - m \cdot t = 10 - 0.5 \times 15 = 10 - 7.5 = 2.5$ cm.
26. Generally conclusions always reflect on the —
(a) Title (b) Results (c) Aim (d) Procedure
Answer: (b) Results
Explanation: Conclusions summarize what the results show and whether the aim was achieved.
27. In an experiment the intercept was 2 and a Y mark was 10 cm at X = 50 cm. Determine the slope of the graph.
(a) 10 (b) 10 (c) 0.16 (d) 1.2
Answer: (c) 0.16
Explanation: With $y = m x + c$, $m = (y - c)/x = (10 - 2)/50 = 8/50 = 0.16$.
28. What is the standard time (in minutes) for the water level to fall from zero mark to 50 cm in the burette?
(a) At least two and half minute
(b) Below 120 seconds
(c) Exactly 3 minutes
(d) At least 150 seconds
Answer: (d) At least 150 seconds
Explanation: The paper lists the acceptable standard as ≥150 s (i.e., at least 2.5 minutes).
29. Which of the following is a variable that can affect the force of static friction?
(a) Surface area of the object (b) Mass of the object (c) Normal force (d) All of the above
Answer: (d) All of the above
Explanation: In ideal simple models static friction depends on normal force and coefficient; practical questions often include mass and surface contact as affecting the effective frictional force.
30. If the force applied to an object is less than the force of static friction, what happens?
(a) The object moves (b) The object accelerates
(c) The object remains stationary (d) The object decelerates
Answer: (c) The object remains stationary
Explanation: If applied force < maximum static friction, static friction balances it and the object does not move.

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