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SUMMATIVE ASSESSMENT – TERM II, 2026–27

PHYSICS – ANSWER KEY (English Medium)

SET 1

Standard: IX **Time: 1½ Hours**

Total Score: 40

Scores for each part are shown in brackets. Award full credit for correct alternative methods.

Q. No.	Answer / Scoring indicators	Score
1	a) kg m/s	1
2	a) Both are true and the reason explains the statement.	1
3	a) 2×10^8 m/s ($v = c \div n = 3 \times 10^8 \div 1.5$)	1
4	a) A man pushes a wall, but the wall does not move.	1
5	a) $p = mv = 0.2 \times 10 = 2$ kg m/s (1) b) $0.2 \times 20 = 4$ kg m/s (momentum doubles) (1)	2
6 A	a) $a = (20 - 0) \div 4 = 5$ m/s² (1) b) Distance = 20 m/s × (10 − 4) s = 120 m (1)	2
6 B	a) $v = u + at = 0 + 2 \times 10 = 20$ m/s (1) b) $s = ut + \frac{1}{2}at^2 = \frac{1}{2} \times 2 \times 100 = 100$ m (1)	2
7	Before firing, total momentum is zero. The bullet gains forward momentum, so the gun gains an equal momentum in the opposite direction (law of conservation of momentum / third law: the bullet pushes the gun back with an equal and opposite force). (2)	2
8	a) Liquid pressure increases with depth, so the bottom must withstand greater pressure (1) b) Sea water has greater density, so a smaller volume needs to be displaced to produce the buoyant force equal to the weight (1)	2
9 A	a) $W = F \times s = 50 \times 4 = 200$ J (1) b) $P = W \div t = 200 \div 10 = 20$ W (1)	2
9 B	a) $PE = mgh = 2 \times 10 \times 5 = 100$ J (1) b) 100 J; the potential energy is converted into kinetic energy (law of conservation of energy) (1)	2
10	a) $F = G m_1 m_2 \div d^2$ (1) b) $G = 6.67 \times 10^{-11}$ N m²/kg² (1)	2
11	The nail displaces only a little water, so the buoyant force is less than its weight and it sinks. The hollow ship displaces a large volume of water; the buoyant force equals its weight, so it floats. (2)	2
12	a) $5 - 3 = 2$ N (1) b) 2 N (1) c) 2 N; Archimedes' principle (1)	3
13	a) First law (inertia of rest) (1) b) Third law (1) c) Second law (force depends on rate of change of momentum) (1)	3
14 A	a) $m = W \div g = 600 \div 10 = 60$ kg (1) b) $600 \div 6 = 100$ N (1) c) No. Mass is the quantity of matter and does not depend on the place (1)	3
14 B	a) Motion of a body under the influence of gravity alone (1) b) $v = gt = 10 \times 3 = 30$ m/s (1)	3

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	c) $h = \frac{1}{2}gt^2 = \frac{1}{2} \times 10 \times 9 = 45$ m (1)	
15 A	a) $P = h\rho g = 2 \times 1000 \times 10 = 20\,000$ Pa (1) b) The ground-floor tap is at a greater depth from the water level, so the pressure is higher (1) c) Density of the liquid (or g) (1)	3
15 B	a) Pressure applied at any point of a liquid at rest in a closed vessel is transmitted equally in all directions (1) b) $F_1/A_1 = F_2/A_2 \rightarrow F_2 = 100 \times 0.5 \div 0.01 = 5000$ N (2)	3
16	a) RD = weight in air ÷ loss of weight in water = 50 ÷ 20 = 2.5 (1) b) Sinks; its density is greater than that of water (RD > 1) (1) c) Hydrometer (lactometer for milk) (1)	3
17	a) $\frac{1}{2} \times 1000 \times 10^2 = 50\,000$ J (1) b) $\frac{1}{2} \times 1000 \times 20^2 = 200\,000$ J (1) c) Work = change in KE = 150 000 J (1)	3
18 A	a) $0.02 \times 400 = 8$ kg m/s (1) b) Zero (1) c) $4 \times v = 8 \rightarrow v = 2$ m/s, opposite to the bullet (1) d) Law of conservation of momentum (1)	4
18 B	a) $5 \times 4 = 20$ kg m/s (1) b) $5 \times 10 = 50$ kg m/s (1) c) $(50 - 20) \div 3 = 10$ kg m/s² (1) d) F = 10 N (1)	4

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