

Academic Challenge 2015

Topic Distribution - Physics

| | Topic | Regional | Sectional | State |
|---|---|----------|-----------|-------|
| 1 | dimensional analysis (mechanics), vector addition | 1 | 3 | 1 |
| 2 | 1D and 2D kinematics, relative motion, free fall | 6 | 3 | 5 |
| 3 | energy, work, conservation of energy, power | 3 | 6 | 3 |
| 4 | Newton's Laws, static equilibrium (forces), friction. Universal Law of Gravitation, circular motion | 8 | 6 | 5 |
| 5 | impulse, linear momentum, conservation of linear momentum | 3 | 3 | 2 |
| 6 | angular momentum, conservation of angular momentum, torque, rotational dynamics, center of mass, static equilibrium (torques) | 3 | 2 | 4 |
| 7 | rotational kinematics | 2 | 1 | 1 |
| 8 | simple harmonic motion | 1 | 0 | 0 |
| 9 | thermodynamics, specific heat, heat transfer, Carnot Cycle | 2 | 1 | 3 |
| A | density, Archimedes, Bernoulli, pressure in fluids | 2 | 3 | 0 |
| B | sound intensity, waves | 2 | 1 | 1 |
| C | optics | 0 | 1 | 2 |
| D | particle physics | 0 | 0 | 0 |
| E | circuits | 1 | 1 | 2 |
| F | e&m, conservation of charge, electric field/force, magnetic field/force, Gauss's Law | 1 | 3 | 4 |
| G | quantum mechanics | 0 | 0 | 0 |
| H | special relativity, relativistic mass and energy | 0 | 1 | 1 |
| I | radioactivity | 0 | 0 | 1 |
| | | 35 | 35 | 35 |

Reference List - Physics

[Title -- Edition -- Author(s) -- Publisher -- Copyright Date -- ISBN]
Physics for Scientists and Engineers – 5th Ed. – Serway and Beicher – Saunders – 2000 – ISBN 0-03-022654-6
Conceptual Physics – 7th Ed. – Hewitt – Harper Collins – 1993 – ISBN 0-673-52185-0
Physics – 2nd Ed. – Cutnell and Johnson – Wiley & Sons – 1992 – ISBN 0-471-52919-2
Fundamentals of Physics – 5th Ed. – Halliday, Resnick & Walker – Wiley & Sons – 1997 – ISBN 0-471-10558-9