Register Number | | | | | | | |

I/II Semester Diploma Examination, April/May 2013

APPLIED SCIENCE

: 3 Hours] [Max. Marks : 100

(i) Answer any **05** subdivisions from section **A**, any **07** subdivisions from section **B** and any **08** subdivisions from section **C**.

(ii) Each subdivision carries **5** marks.

SECTION – A

(Answer any **05** subdivisions)

(a) Mention seven basic physical quantities & their units in SI system. 5

(b) Draw a neat diagram of screw guage and label its parts. 5

(c) State Newton's II Law of motion.

Car of mass 1000 kg moving with velocity of 10 m/s is brought to rest in 4 seconds. Calculate the force required. 2 + 3

(a) State and prove law of conservation of momentum. 2 + 3

(b) Define friction. Mention any three advantages of it. 2 + 3

(a) Describe an expt. to verify law of parallelogram of forces. 5

(b) Define moment of a force. What are the conditions of equilibrium of number of coplanar parallel forces acting on a rigid body? 2 + 3

SECTION – B

(Answer any **07** subdivisions)

(a) Define stress. Write the SI unit and dimension of stress. 2 + 1 + 2

(b) A block of rubber 0.5 m long, 0.2 m wide and 0.4 m high has its lower face fixed and its upper face is subjected to a pull of 400 N parallel to the lower face. The upper face is found to move 0.02 m relative to the lower face. Calculate the modulus of rigidity of rubber. 5

(c) Define capillarity. Write three applications of it. 2 + 3

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5. (a) State Gay Lussac's Law. Define isothermal and adiabatic process. 2 + 1½

(b) Define specific heat of a substance. Write three applications of convection.

(c) State first law of thermodynamics and write its mathematical for Define Radiation. 2 +

6. (a) Define period and amplitude of a particle executing SHM. Give one example SHM. 2 +

(b) Distinguish between transverse and longitudinal waves.

(c) Explain Newton's formula for the velocity of sound in air and give t Laplace's correction for the propagation of sound in air.

7. (a) Define stationary waves. Mention any three characteristics of stationary waves

(b) Describe an experiment to determine the unknown frequency of the tuning fo using sonometer by absolute method.

SECTION – C

(Answer any 08 subdivisions)

8. (a) Explain any two theories of nature of light.

(b) Distinguish between Interference and Diffraction.

(c) Explain Young's double slit experiment.

9. (a) Define polarisation. Write use of polaroids limit of resolution. Write resolvin power of a microscope. And how are they related to each other ? 2 +2

(b) Write ray diagram of electron microscope.

(c) Describe the experimental study of photoelectric effect.

10. (a) What is Raman effect ? Write three applications of Raman effect. 2

(b) Define Natural radioactivity. Mention any three properties of α-rays. 2

(c) Write any five applications of Laser. 2

11. (a) Explain Greenhouse effect. Explain the causes of depletion of ozone layer. 2

(b) What is corrosion ? List the preventive methods of corrosion. 2

(c) Define pH of a solution. Write three applications of pH. 2