Jharkhand University of Technology, Ranchi

Diploma 1st Semester Examination, 2024 (NEP-2024)

Subject : Engineering Physics **Subject Code : BSC 102**

Time Allowed : 3 Hours **Full Marks : 70**

Answer in your own words.
Answer any five *questions.* Question No. 1 *is compulsory.*
Marks are given in the right margin.

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1. Choose the correct answer in the following: 2×7=14

(i) The dimensional formulae for Speed is
(a) $[M^0L^0T^0]$ (b) $[M^0L^1T^{-1}]$
(c) $[M^1L^1T^1]$ (d) None of these

(ii) Stoke's formula is related with
(a) Initial velocity (b) Final velocity
(c) Terminal velocity (d) Critical velocity

(iii) Isobaric process is
(a) No communication of heat (b) Pressure constant
(c) Volume constant (d) Temperature constant

(iv) Laser is
(a) Bichromatic (b) Monochromatic
(c) Polychromatic (d) None of these

(v) Unit of stress is
(a) Newton (b) Joule
(c) N/m^2 (d) None of these

(vi) S.I. unit of temperature is _____
(a) Celsius (b) Kelvin
(c) Newton (d) None of these

(vii) The physical property of a material that can not returns to its original shape after the stress is removed is known as
(a) Plasticity (b) Elasticity
(c) Opacity (d) None of these

2. (a) Define unit. Also explain fundamental unit and derived unit with examples.

   (b) Briefly discuss Vernier calliper with schematic diagram. 7+7

3. (a) Explain Young's modulus of elasticity, Bulk modulus of elasticity and Modulus of rigidity.

   (b) Explain Newton's law of viscosity. 7+7

4. (a) Briefly explain the modes of heat transfer.

   (b) What are Centigrade scale, Fahrenhiet scale and Kelvin scale? 7+7

5. (a) What do you mean by reflection and refraction of light? Explain.

   (b) Derive the relation among velocity, frequency and wavelength. 7+7

6. (a) Explain construction and working of photoelectric cell.

   (b) Calculate the energy of photon of red light in a vacuum with a wavelength of 695nm. 7+7

7. Write short notes on *any four*: 3.5×4=14

   (a) Reynold's number

   (b) Capillary action

   (c) Properties of laser

   (d) X-rays

   (e) Boyle's law
