TED (15) – 2003

(REVISION — 2015)

Reg. No.....

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# DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

## ENGINEERING PHYSICS – II

[*Time* : 3 hours

(Maximum marks : 100)

### PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is meant by banking of roads ?
2. Derive the relation between angular momentum and rotational kinetic energy.
3. What is a Polar satellite ?
4. Distinguish between stimulated and spontaneous emission.
5. What is a moderator ?

(5×2 = 10)

### PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Derive an expression for the moment of inertia of a disc about
   (a) an axis passing through the centre and perpendicular to its plane.
   (b) about a diameter.
2. What is meant by centripetal Acceleration ? Derive its expression.
3. Discuss the variation of acceleration due to gravity 'g' with altitude.
4. State and explain Kirchhoff's Laws.
5. Derive an expression for the magnetic field at the centre of a current carrying coil.
6. Give Einstein's explanation of Photoelectric effect.
7. Discuss the various forms of energy sources.

(5×6 = 30)

### PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

#### UNIT — I

III (a) The rotor of a motor has a moment of inertia 15 kgm$^2$. Calculate the torque required to increase its speed of rotation from 320 rpm to 600 rpm in 4 seconds. 3

(b) Define radius of gyration. What is its SI unit ? What is its value for a uniform disc of mass M and radius R, if the disc is rotating about an axis passing through the centre and perpendicular to its plane. 6