



C-16-A/AA/CHST/C/CM/EC/EE/M/AEI/
MNG/IT/PKG-103

5003

**BOARD DIPLOMA SUPPLEMENTARY (INSTANT)
EXAMINATION, (C-16)**

JUNE - 2019

**COMMON - FIRST YEAR EXAMINATION
ENGINEERING PHYSICS**

Time : 3 Hours]

[Total Marks : 80

PART - A

2×15=30

- Instructions :**
- (1) Answer any 15 questions.
 - (2) Each question carries 2 marks.
 - (3) Answer should be brief and straight to the point and shall not exceed five simple sentences.
 - (4) Assume missing data wherever necessary.

- 1 Write any two limitations of dimensional analysis.
- 2 Write dimensional formulae of (i) Force (ii) Power.
- 3 State triangle law of vectors.
- 4 Define scalar and vector quantities.
- 5 Define projectile.
- 6 A body thrown up vertically upwards with a velocity 19.6 m/sec. Find the maximum height reached by the body.
- 7 State any two laws of friction.
- 8 Write any two advantages of friction.
- 9 Define kinetic energy and potential energy.

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- 10 The displacement of a particle executing SHM is given by $Y=5\sin(2\pi t + \pi/4)$. Find (i) Amplitude, (ii) Angular velocity.
- 11 Define seconds pendulum.
- 12 State the first law of thermodynamics.
- 13 Write any two differences between isothermal and adiabatic process.
- 14 Define noise pollution.
- 15 Write Sabine's formulae and explain the terms.
- 16 Define stress and strain.
- 17 State Hooke's Law of elasticity.
- 18 State Ohm's Law.
- 19 Calculate the potential difference applied across a conductor of resistance 2Ω . So that a current of 2Amp may flow through it.
- 20 Define super conductor.

PART - B

10×5=50

- Instructions :**
- (1) Answer any **FIVE** questions.
 - (2) Each question carries **TEN** marks.
 - (3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.
- 21 (a) State the parallelogram law of vectors. Derive the expressions for magnitude and direction of the resultant. 7
 - (b) A force $(2\mathbf{i}+3\mathbf{j}+4\mathbf{k})$ N acts on a body for 4 seconds and produces a displacement of $(3\mathbf{i}+4\mathbf{j}+5\mathbf{k})$ m, calculate the power. 3

- 22** (a) Show that the path of a projectile is a parabola in the case of oblique projection. **6**
(b) A bullet is fired at an angle 45° with the horizontal with a velocity 49 m/sec. Find its horizontal range and time of flight. **4**
- 23** (a) State the law of conservation of energy and verify in the case of a freely falling body. **7**
(b) Derive the relationship between kinetic energy and momentum. **3**
- 24** (a) Derive the expressions for displacement and velocity of a particle executing Simple Harmonic Motion. **6**
(b) Find the length of the seconds pendulum at a place where $g=9.8 \text{ m/sec}^2$. **4**
- 25** (a) Define ideal gas. Derive the ideal gas equation $PV=RT$. **6**
(b) A gas at 30°C has its temperature raised so that its volume is doubled, the pressure remaining constant. What is its final temperature? **4**
- 26** (a) Write any six effects of noise pollution. **6**
(b) Write any four applications of the Doppler effect. **4**
- 27** (a) Derive the balancing condition of Wheatstone's bridge with neat diagram. **7**
(b) Explain coulomb's inverse square law. **3**
- 28** (a) Define photo electric effect and write the laws of photo electric effect. **6**
(b) Write any four applications of optical fibre. **4**
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