C-16S-A/AA/CH/CHST/EI/MET/MNG/IT/
TT/PKG/C/CM/EC/EE/M-**103**

5103

BOARD DIPLOMA SUPPLEMENTARY EXAMINATION, (C-16S)

DECEMBER - 2020

FIRST SEMESTER (COMMON) EXAMINATION

ENGINEERING PHYSICS - I

Time : 2 Hours]　　　　　　　　　　　　　　[Total Marks : 80

PART - A　　　　　　　　　3×10=30

Instructions :　　(1)　Answer any *TEN* questions.

　　　　　　　　　(2)　Each question carries *THREE* marks.

　　　　　　　　　(3)　Each answer should not exceed mor than $\frac{1}{2}$ page.

1　Define physical quantity give one example.

2　Write the dimensional formula of (i) Force (ii) Velocity.

3　State any two advatnages of S.I. units.

4　Define fundamental unit and derived unit.

5　Define super conductivity.

6　Define critical angle in refraction of light.

7　Mention types of optical fiber.

8　Write any two applications of super conductors.

9　State Boyle's law in gases.

10　Define absolute zero temperature.

11　State second law of thermodynamics.

12 Define isothermal process.

13 Write any two properties of cross product.

14 State triangle law of vectors.

15 Define :

    (i)   Null vector

    (ii) Position vector

16 Find the unit vector in the direction of 2i+3j+4k.

17 Define acceleration due to gravity.

18 Write any two examples for projectile motion.

19 Write any two equations of motion.

20 A body is thrown up vertically with a velocity of $19.6ms^{-1}$. Find

    time of fight of the body ?

PART - B   10×5=50

Instructions :   *(1) Answer any FIVE questions.*

                      (2) Each question carries TEN marks.

                      (3) Each answer should not exceed mor than TWO
                      pages.

21 (a) Define photo electric effect. Write Einstein equation   2+2+1
         for photo electric effect and mention the terms involved in
         it.

    (b) Mention any five application of photo electric effect ?   5

22 (a) Explain the principle and working of an optical fiber ?   6

    (b) Write any four applications of optical fiber.   4

23 (a) Derive ideal gas equation.   7

    (b) One litre of air at 27° is heated until the pressure and   3
         volume are doubled. Find the final temperature.

                                                        [Contd...

24 (a) Prove that $C_p - C_v = R$.   7

   (b) State first law of thermodynamics and write mathematical   3
expression for it ?

25 (a) Derive the expression for magnitude and direction of   7
resultant of two vectors parallelogram law of vectors.

   (b) The resultant of two forces 8 N and 6 N is 10 N. Find   3
the angle between them ?

26 (a) Define dot product and mention any five properties of   2+5
dot product ?

   (b) A force $2\hat{i} + 3\hat{j} + 4\hat{k}$ N acts on a body for 4 s and   3

produces displacement $3\hat{i} + 4\hat{j} + 5\hat{k}$. Calculate the power

27 (a) Show that the path of the projectile is parabola in oblique   7
projection.

   (b) A ball is projected into air with an initial velocity of   3
$9.8 ms^{-1}$ at angle of 45° with the horizontal. Find its
horizontal range.

28 (a) Derive the expression for (i) Maximum height   3+4
(ii) Time of descent of a vertically projected body

   (b) A stone is dropped from the top of a building and reaches   3
the ground after 4 seconds. What is the height of the building ?
(Take $g = 10 ms^{-2}$).

3

5103 |