4003

C14-A/CH/CHST/AEI/FW/MNG/
MET/IT/TT/PKG/C/EC/EE/M/CM -**103**

4003

BOARD DIPLOMA EXAMINATION, (C-14)
OCTOBER/NOVEMBER-2018
FIRST YEAR EXAMINATION

ENGINEERING PHYSICS

Time : 3 Hours] [Total Marks: 80

PART-A

4X10=40

Instructions : 1. Answer **All** questions.

2. Each question carries **Four** marks(Two marks for each bit).

3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. (a) Define dimensions and dimensional formula
   (b) Write the dimensional formula of i) Force ii) Momentum.
2. (a) Write Define Scalar and Vector. Give on example for each.
   (b) State polygon law of vectors.
3. (a) Write the equations of motion under gravity.
   (b) A body is thrown up vertically with a velocity of $39.2ms^{-1}$. Find the total distance travelled before it reaches the ground.
4. (a) Define simple harmonic motion.
   (b) The time period of sample pendulum is 2s. if its length is increased 4 times, what is the time period.
5. (a) Define Boyle's law and Charles I law.
   (b) State First law of Thermodynamics.
6. (a) What is Reverberation (b) Write Sabine formula.
7. (a) State Hooke's law (b) Define the Surface Tension
8. (a) Define Angle of contact (b) What is the effect of temperature on Viscosity of Liquids and Gases.
9. (a) Write the expression for specific resistance of a wire and state its S.I units
   (b) State coulombs inverse square law of magnetic poles.
10. (a) State the Laws of Photo electric effect.
    (b) State the applications of optical fibers

PART-B

10X4=40

Instructions : 1. Answer any **Four** questions.

2. Each question carries **ten** marks.

3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. (a) State parallelogram law of vectors and derive the expression for the magnitude and direction of resultant vector.

    (b) A force F= 5i+3j+2k is applied on a body. If the body is displaced by S = 2i+4j-3k. Find the work done.

12. (a) Derive the expression for time of flight and range of a projectile for oblique projection.

    (b) An aeroplane flying horizontally with a speed of $80ms^{-1}$ releases bomb at height of 490m form the ground. Find when and where the bomb will strike the ground.

13. (a) Derive the expression for acceleration and time of a body moving down a smooth inclined plane.

    (b) Write any four methods of reduce the friction.

14. (a) State the law of conservation of energy. Prove it in case of freely falling body.

    (b) A machine gun fires 240 bullets per minute. Each bullet travels with speed of 300 m/s. Mass of each bullet is 5 gm. Find the power of machine gun.

15. (a) Derive expression for displacement and velocity of a particle executing SHM

    (b) A particle undergoes SHM with an amplitude of 5cm and has an angular velocity of 500 $rads^{-1}$. Find the velocity at a distance of 4cm from the equilibrium position.

16. (a) Define ideal gas. Derive the ideal gas equation.

    (b) At 30^0 C the volume of gas is 100 c.c Keeping the pressure constant the gas is heated to 90^0C degree centigrade find its final volume

17. A) Define Doppler's effect and write any four applications of it.

    (b) A man hears an echo of his voice from a cliff after 4 sec. if the velocity of sound is 340 m/s what is the distance of cliff from the man?

18. (a)State Kirchhoff's laws and derive the expression for the balancing condition of whetstone's bridge.

    (b) Find the magnetic moment of a bar magnet of length 12 cm and pole strength of 5 Am.

****