Mrs Binder.

SET -B

INTERNATIONAL INDIAN SCHOOL-RIYADH

FIRST TERM EXAMINATION –MAY 2015

GRADE: XI | **MAX.MARKS:70**

SUBJECT: PHYSICS (THEORY) | **TIME: 3HOURS**

GENERAL INSTRUCTIONS

1. All questions are compulsory. There are 26 questions in total.
2. This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
3. Section A contains five questions of one mark each, Section B contains five questions of two marks each, Section C contains twelve questions of three marks each, Section D contains one value based question of four marks and Section E contains three questions of five marks each.
4. There is no overall choice. However an internal choice has been provided in one question of two marks, two questions of three marks and all three questions of five marks each. You have to attempt only one of the choices in such questions.
5. Use of calculator is not permitted. However you may use log table, if necessary.

Section A

1. A physical quantity which has a unit but no dimensions.
2. Can a moving body have a constant velocity but a varying speed?
3. A body thrown vertically up with an initial velocity returns to the same point after few seconds. Draw velocity –time graph for the motion of the body
4. How is coefficient of friction changed when the weight of the body is doubled?
5. Which of the measurement is more accurate and why?

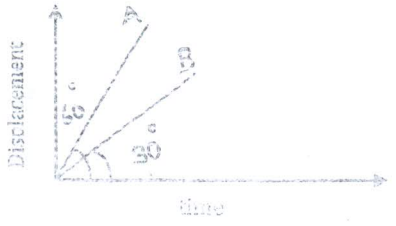
   (a) 880000 m (b) 80.000 m (c) 0.00088 m

Section B

6. Explain how to measure the thickness of a molecule of oleic acid.

   OR

   Density of a rod, $d=m/(\pi r^2 l)$, the % error in m, r, l are 1.5%, 2.5%, 1.2% respectively, find the % error in d.
7. Two straight lines drawn on the same displacement- time graph make angles 30^0 and 60^0 with time axes respectively. Which line represents greater velocity? What is the ratio of two velocities?



8. A force $=(0.500 \pm 5)$ N is applied over an area of (0.32 ± 0.02) m^2. Calculate the pressure exerted over the area with error limits.
9. Derive the expression for force and acceleration when a body is moving downwards along an inclined plane. Friction is not negligible.

10. A cyclist comes to a skidding stop in 6m.During this process, the force on the cycle due to the road is 300N and is opposite to the motion of the cycle.
    a)How much work does the road do on the cycle?
    b) How much work does the cycle do on the road? Why?

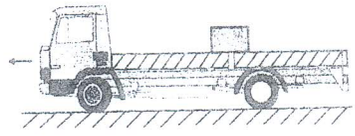
Section C

11. To find the value of g by using simple pendulum, the following observations were made:
    Length of the thread, l= (100±0.1) cm
    Time period of oscillation, T= (2±0.1)s.
    Calculate the maximum permissible error in measurement of g. Which quantity should be measured more and why?

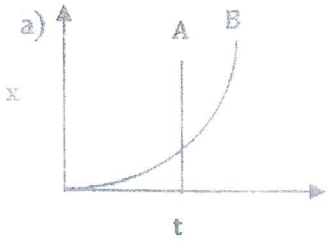
OR

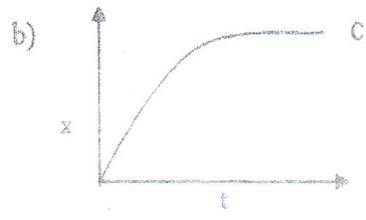
The velocity V of transverse waves in a string may depend upon length l of the string, tension T in the string and mass per unit length m of the string. Derive the formula for V by dimensional method.

12. Draw velocity-time graph of uniformly accelerated motion. By using this graph deduce all three equations of motion.
13. Find the magnitude and direction of the resultant of two vectors A and B in terms of their magnitudes and angle θ between them.
14. The rear side of a truck is open and a box of 40kg mass is placed 5m away from the open end as shown in figure. The coefficient of friction between the box and the surface below it is 0.15. On a straight road, the truck starts from rest and accelerates with $2m/s^2$. At what distance from the starting point does the box fall off the truck? (Ignore the size the box)



15. State and prove Work- Energy Theorem for constant force.
16. Two masses m_1 and m_2 are suspended from a light inextensible string passing over a pulley. Derive the expressions for acceleration, Tension in the string for (m_2>m_1).
17. Identify the types of motion in following cases.





OR

Draw x-t, v-t and a-t graph for a freely falling body.

18. Two parallel rail tracks run north-south. Train A moves north with a speed of 54km/h, and train B moves with a speed of 90km/h. What is the
    (a) Velocity of B with respect to A?
    (b) Velocity of ground with respect to B?
    (c) Velocity of a monkey running on the roof of the train A against its motion (with a velocity of 15km/h with respect to train A) as observed by a man standing on the ground?