

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2011-2012 and thereafter)
SUBJECT CODE : 11PH/AC/PC33

B.Sc. DEGREE EXAMINATION NOVEMBER 2013
BRANCH III - PHYSICS
THIRD SEMESTER

REG. NO. _____

COURSE : ALLIED - CORE
PAPER : PHYSICS FOR CHEMISTRY - 1
TIME : 30 MINUTES

MAX. MARKS : 30

SECTION – A

TO BE ANSWERED IN THE QUESTION PAPER ITSELF

ANSWER ALL QUESTIONS:

(30x1=30)

I Choose the correct answer:

1. Moment of inertia is a) mr^2 b) m c) r^2 d) $m r$
2. The value of g is a) 9.8 m/s^2 b) $9m$ c) $9.9m$ d) $8 m$
3. The time period of oscillation of simple pendulum is
a) $t = 2\pi\sqrt{\frac{l}{g}}$ b) $t = 2\pi$ c) $t = 3\pi$ d) $t = 4\pi$
4. Space, time and mass are absolute quantities in
a) Newtonian Relativity b) Einstein
c) Fraunhofer d) Davison Relativity.
5. The length contraction is given by
a) $l = l_0\sqrt{1 - \frac{v^2}{c^2}}$ b) $l = \sqrt{1 - \frac{b^2}{c^2}}$ c) $l = l_0$ d) $l = l_1 - l_2$
6. Einstein mass energy relation is
a) $E = mc^2$ b) $E = m$ c) $E = C^2$ d) $E = C$
7. Poisson's ratio is
a) lateral \div longitudinal b) lateral c) longitudinal d) parallel
8. Youngs modulus - unit is
a) Nm^{-2} b) Nm c) N d) Nm^{-1}
9. Surface tension is
a) force /length b) force c) length d) mass
10. The surface tension by drop weight method is
a) $T = \frac{mg}{3.8r}$ b) $T = mg$ c) $T = m$ d) $T = g$
11. Two waves produce interference to give
a) $y = y_1 + y_2$ b) $y = y_1 - y_2$ c) $y = y_1$ d) $y = y_2$

12. Bending of waves is called
 a) diffraction
 c) Polarisation
 b) Interference
 d) reflection
13. Brewster's law is
 a) $\mu = \tan i_p$
 b) $i = r$
 c) $\mu = m$
 d) $i = x$
14. Nichol prism is used as
 a) polariser - and analyser
 b) polariser
 c) analyser
 d) none
15. The number of lines/cm in a grating is
 a) 6000
 b) 7000
 c) 8000
 d) 9000

Fill in the blanks:

16. The unit of g is _____.
17. The transformation $x^1 = x$ $y^1 = y$ is called _____.
18. The critical velocity depends on _____ number
19. For one incident ray there are two refracted rays, this refraction is _____.
20. In Newton's rings the central ring is _____.

State true or false:

21. Acceleration due to gravity varies with depth.
22. Time period is measured in secs.
23. Momentum is mv .
24. The unit of wavelength is Angstrom.
25. Polaroids are used in sun glasses.

Short Answer:

26. What is compound pendulum?
27. Define twin paradox.
28. What is interfacial surface tension?
29. Define Lorentz transformation.
30. What is cantilever?

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SECTION – B

ANSWER ANY FIVE QUESTIONS: **(5x6=30)**

1. Write note on special theory of relativity.
2. Show that $1 \text{ amu} = 931 \text{ amu}$.
3. The number of lines made on grating is 6000 lines per cm. Determine the width of slit.
4. Write short note on a) diffraction b) Transmission grating .
5. Explain Nicol prism.
6. Give the uses of polaroids.
7. Write note on time dilation.

SECTION – C

ANSWER ANY TWO QUESTIONS: **(2x20=40)**

8. Give the uses of postulates of theory of relativity and give Lorentz transformation equations.
9. Obtain expression for bending moment.
10. How is wavelength determined from Newtons rings formation?
11. How is period of oscillation determined from compound pendulum?
