

3/MDC-214 Syllabus-2023

2025

(Nov-Dec)

FYUP : 3rd Semester Examination

MULTIDISCIPLINARY COURSE

(Physics Around Us)

MDC-214

Marks : 56

Time : 2½ hours

*The figures in the margin indicate full marks
for the questions*

**Answer any four questions from Section—A
and any four questions from Section—B**

SECTION—A

1. Define speed and velocity of motion of an object. What is the difference between speed and velocity? 1+1+2=4
2. What is acceleration due to gravity? Give two natural or experimental evidences in support of gravitation. 2+1+1=4

3. What is refraction of light? What is the cause of refraction? Give two examples of refraction of light from daily life. $1+1+2=4$
4. Explain (a) electric charge, (b) electric voltage and (c) electric current. $1+1+2=4$
5. What are optical fibres? Explain how a light wave propagates through optical fibres. $2+2=4$
6. What is an electromagnetic wave? What is the speed of an electromagnetic wave in vacuum? Give one example of an electromagnetic wave. $2+1+1=4$

SECTION—B

7. (a) Write all the fundamental units in Physics. Write the dimensions of velocity, momentum and force. $3+3=6$
- (b) What is a force? State the Newton's second law of motion. $2+2=4$
8. (a) What are centripetal and centrifugal forces? Give one example of each. $2+2+1+1=6$
- (b) What is torque acting on a body? How does the torque acting on a body change with distance from the axis of rotation? $2+2=4$

9. (a) What is temperature? What are the different temperature scales? Write the relation between °F and °C. $1+3+2=6$
- (b) Define pressure. Give its SI unit. Explain why a sharp knife is more effective in cutting the objects than a blunt knife. $1+1+2=4$
10. (a) What are concave and convex mirrors? Give two applications each of concave and convex mirrors. $1\frac{1}{2}+1\frac{1}{2}+1+1=5$
- (b) What is presbyopia and astigmatism? How can they be corrected? $1\frac{1}{2}+1\frac{1}{2}+1+1=5$
11. (a) What is a sound wave? How does a sound wave propagate? $1+2=3$
- (b) What is Doppler effect? 2
- (c) What is electromagnetic spectrum? What is the range of frequency of the visible spectrum? $1+2=3$
- (d) How are electromagnetic waves used in mobile phones? 2
12. (a) What is an electrical circuit? State Ohm's law. $2+2=4$
- (b) What is electric power? What is its SI unit? $2+1=3$
- (c) Explain the process of mutual induction in a transformer. 3

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