www.binils.com
Anna University | Polytechnic | Schools

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 41109

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

First Semester

Civil Engineering

PH 8151 – ENGINEERING PHYSICS

(Common to Aeronautical Engineering/Aerospace Engineering/Agriculture Engineering/ Automobile Engineering/Biomedical Engineering/Computer Science and Engineering/ Computer and Communication Engineering/Electrical and Electronics Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/ Environmental Engineering/Geoinformatics Engineering/Industrial Engineering/ Industrial Engineering and Management/Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Material Science and Engineering/Mechanical Engineering / Mechanical Engineering (Sandwich) Mechanical and Automation Engineering/Mechatronics Engineering/Medical Electronics/Petrochemical Engineering/ Production Engineering/Robotics and Automation/Safety and Fire Engineering/Biotechnology/Chemical Engineering/Chemical and Electrochemical Engineering/Fashion Technology/Food Technology/Handloom and Textile Technology/Information Technology/Petrochemical Technology/Petroleum Engineering/Pharmaceutical Technology/Plastic Technology/Polymer Technology/Textile Chemistry/Textile Technology/Safety and Fire Engineering/ Artificial Intelligence and Data Science Computer Science and Business System/ Biotechnology and biochemical Engineering)

www.binils.com

(Regulations 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Draw the stress-strain diagram. List any two uses.

2. What do you mean by I-shaped girders?

3. What is a plane progressive wave?

4. Write the principle of fiber optics.

www.binils.com
Anna University, Polytechnic & Schools

www.binils.com
Anna University | Polytechnic | Schools

5. What do you mean by bimetallic strips?

6. List the advantages of solar water heater.

7. Define Compton effect.

8. What do you mean by tunneling in quantum mechanics?

9. Distinguish between crystalline and amorphous materials.

10. List any two roles of imperfection in plastic deformation.

PART B — (5 × 16 = 80 marks)

11. (a) Derive an expression for tensional rigidity of a cylindrical rod. (16)

Or

(b) Discuss in detail about the theory and experiment for non-uniform bending of a beam. (16)

12. (a) Derive an equation for Einstein's coefficients.

Or

www.binils.com

(b) Describe and classify the fibre optics based on material, mode and refractive index profile. (16)

13. (a) Describe Lee's disc method to determine the thermal conductivity of a bad conductor. (16)

Or

(b) Write a note on :

(i) Heat exchangers

(ii) Refrigerators

(iii) Ovens. (16)

14. (a) Derive the expression for Planck's quantum theory of radiation. (16)

Or

(b) Discuss in detail about the particle in a 1-D rigid box and obtain eigen function and its eigen values. Show that the eigen values are discrete. (16)

www.binils.com
Anna University, Polytechnic & Schools

www.binils.com
Anna University | Polytechnic | Schools

15. (a) Describe the coordination number and packing factor for BCC and FCC. (16)

Or

(b) Discuss in detail about the different types of crystal imperfections. (16)

———————

www.binils.com

www.binils.com
Anna University, Polytechnic & Schools