

Printed Pages : 3



EME056

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 140856

Roll No.

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B.Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15
CONCEPTS OF MODERN PHYSICS

Time : 3 Hours]

[Total Marks : 100

1 Attempt any one part. Each part carries equal marks.

[10×1=10]

- (a) Write a short note wave particle duality.
- (b) Derive the Schrodinger's time independent wave equation and give the physical significance of wave function.

2 Attempt any one part. Each part carries equal marks.

[10×1=10]

- (a) Explain the working and construction of ruby laser.
- (b) What is the de-Broglie matter wave? Calculate de-Broglie wavelength associated with a proton moving with a velocity equal to $\frac{1}{20}$ th of the velocity of light.

- 3 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) Explain in brief about the elementary particles and give its characteristics.
 - (b) What is the law of conservation? Explain quarks model.
- 4 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) Explain Feynman diagrams with their rules.
 - (b) Write a short note on simple particle dynamics.
- 5 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) Describe the working and construction of Michelson-Morley experiment.
 - (b) Explain how relativity works as a bridge of electricity and magnetism.
- 6 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) What the general – relativity concept is of curved space-time?
 - (b) Explain in brief Minikowaskian space-time.

- 7 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) Give a brief review of universe big-bang to black-hole including nucleo-synthesis.
 - (b) What is Hubble's Law? Explain the critical density.
- 8 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) What is solar system and explain about the galaxy.
 - (b) Explain about dark – matter and dark energy in brief.
- 9 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) What is the Maxwell unification of electric and magnetic field as electromagnetic?
 - (b) Write the short note on:
 - (i) Standard model
 - (ii) Strong and weak nuclear force
- 10 Attempt any one part. Each part carries equal marks.
[10×1=10]
- (a) With the introduction of Feynman diagram explain the GSW electro-weak unification.
 - (b) What do you understand by the M-theory? Explain it.