

X

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Courses » Theory of groups for physics applications

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Unit 13 - Week 12

Course outline

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Week 12

Lecture 45: SU(3) And Lie's Classification-I

Lecture 46: SU(3) And Lie's Classification-II

Lecture 47: Fundamental

Week 12-Assignment 12-MCQ

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-10-24, 23:59 IST.**

1) In a universe free of electromagnetic interaction, how can one differentiate between a proton and a neutron (assuming their masses to be the same)? **1 point**

- By their strong nuclear force
- By their intrinsic spin in the Stern-Gerlach experiment
- By their isotopic spin in a weak interaction experiment
- By the gravitational field of a black hole

No, the answer is incorrect.

Score: 0

Accepted Answers:

By their isotopic spin in a weak interaction experiment

2) The constituents of Baryons and Mesons are (where q 's are the quarks and \bar{q} 's are the antiquarks) **1 point**

- $q\bar{q}$ and qqq
- qqq and $q\bar{q}$
- qqq and qq
- qq and qqq

No, the answer is incorrect.

Score: 0

Accepted Answers:

qq and qqq

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12-Assignment
12-MCQ

Week12-
Lecture Slides

Week
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Solutions

9

No, the answer is incorrect.

Score: 0

Accepted Answers:

8

4) Ordinary Vectors are

1 point

- tensors of rank 1
 tensors of rank 0
 tensors of rank 2
 not treated as tensors

No, the answer is incorrect.

Score: 0

Accepted Answers:

tensors of rank 1

5) The isotropy of space implies the conservation of

1 point

- Linear Momentum
 Energy
 Angular Momentum
 Electric charge

No, the answer is incorrect.

Score: 0

Accepted Answers:

Angular Momentum

6) From the Gellmann-Nishijima formula, $Q = T_3 + \frac{Y}{2}$, find the hypercharge Y of proton. 1 point

- 1
 0

 -1

 $\frac{1}{2}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

1

7) The Hamiltonian and the Lagrangian are related through

1 point

- Mobius transformation
 Fourier transformation
 Laplace transformation
 Legendre transformation

No, the answer is incorrect.

Score: 0

Accepted Answers:

Legendre transformation

8) Any gauge transformation can be treated as local if

1 point

- the transformation parameter is spacetime dependent
- the transformation parameter is spacetime independent
- the transformation generator is spacetime dependent
- the transformation generator is spacetime independent

No, the answer is incorrect.

Score: 0

Accepted Answers:

the transformation parameter is spacetime dependent

9) In the presence of an electromagnetic field, the kinetic part $\frac{|\vec{p}|^2}{2m}$ of the Hamiltonian of a classical charged particle with mass m and charge q needs to be replaced by

1 point

- 0
-
- $\frac{1}{2m} \left| \vec{p} - \frac{q}{c} \vec{A} \right|^2$
-
- $\frac{|\vec{p}|^2}{2m}$
-
- $\frac{1}{2m} \left| \frac{q}{c} \vec{A} \right|^2$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\frac{1}{2m} \left| \vec{p} - \frac{q}{c} \vec{A} \right|^2$

10) Homogeneity in time gives us the conservation of

1 point

- Isotopic spin
- Angular momentum
- Linear momentum
- Energy

No, the answer is incorrect.

Score: 0

Accepted Answers:

Energy

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