

APOLLO

Particle Physics

FBISE Physics Class 11 (HSSC-I)

Domain F: Modern Physics

20 questions | questions

Original FBISE question crops. National Curriculum 2022-23 topic.

40.	During β^- decay, a neutron within a nucleus transforms into which of the following sets of particles?	Proton + electron + anti-neutrino	Proton + positron + neutrino	Electron + gamma rays	Neutron + proton	☐ ☐ ☐ ☐
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41.	Which statement best compares a quark and an anti-quark of the same flavor?	Both have same electric charge but opposite masses	Both have opposite electric charges but same mass	Both have same charge and mass but different colors	They are identical in every way	☐ ☐ ☐ ☐
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42.	Which elementary particle serves as the force carrier for the electromagnetic interactions?	Gluon	Photon	Z-Boson	W-boson	☐ ☐ ☐ ☐
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43.	Alpha particles are emitted with discrete energies, whereas beta particles are emitted with a continuous range of energies because:	neutrino shares the energy in alpha decay	neutrino/anti-neutrino shares the energy in beta decay	anti-neutrino shares the energy in alpha decay	alpha particles are bosons	☐ ☐ ☐ ☐
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45.	In electron-positron annihilation, why are at least two photons produced instead of just one?	To conserve electric charge	To conserve mass	To conserve linear momentum	To conserve lepton number	☐ ☐ ☐ ☐
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46.	Both electrons and neutrinos are classified as leptons; because	They experience strong nuclear force	They do not experience strong nuclear force	They are made up of quarks	They are made up of anti-quarks	☐ ☐ ☐ ☐
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Scenario for MCQs # 77 to 80		Inside a “high-velocity” research chamber, physicists observe two different subatomic interactions. They note the following:				
		System		Interaction Mechanism		
		Quarks bound inside a proton		Exchange of gluons		
		Electrons in the beam		Exchange of photons		
		Electrons in the beam			Exchange of photons	
77.	Which fundamental force is responsible for the exchange of gluons between quarks?	Electro-magnetic force	Weak nuclear force	Strong force	Gravitational force	☐ ☐ ☐ ☐

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79.	In particle physics, gluons and photons both are called force-carrying particles. They are generally categorized as:	Leptons	Hadrons	Gauge-Bosons	Fermions	☐ ☐ ☐ ☐

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80.	Why do quarks exchange gluons whereas electrons do not?	electrons are negatively charged particles and repel gluons	Gluons only interact with particles having color and quarks possess color charge	Gluons decay before reaching electrons	Gluons only interact with leptons	○ ○ ○ ○
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7	Define baryons and mesons. Give two examples of each.	2+2
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OR	If ${}_{92}^{233}\text{U}$ decays twice by alpha particle emission, what is the resulting isotope? Show by equation.	03
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OR	Compare gluons and photons.	03
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(xi)	What is meant by annihilation? Give one annihilation reaction.	03
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OR	What is meant by quark? Explain the quark family of particles.	2+4
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(ii)	Describe photon as a force carrier.
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Give Comparison of amorphous and polymeric solids. (Three points)	1x3	OR	State the Higgs Boson as a fundamental particle which is responsible for the particle's mass.	03
The magnitudes of dot and cross product of two			How a seismometer uses electromagnetic induction	

FBISE model paper | Section A Q1(xii) | 1 mark

xii.	Lepton number for muon particle is:	-1	+1	+1/2	0
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FBISE model paper | Section B Q2(ii) OR | 3 marks

(ii)	Define crystalline and amorphous solid.	03	OR	What are the differences between gluons and photons?	03
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FBISE model paper | Section C Q5 | 6 marks

Q.5	What is meant by quark? Explain the quark family of particle.	02+ 04	OR
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