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See instructions inside

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Contents

Before preparing for Common Universities Entrance Test (CUET), a strong road map must be prepared, which includes what subject to cover, when, how many hours you should allocate for each subject, etc.

Most of you may not have clarity on your goals while in school, while a few plan it early!

If you have set your goal to get admission to one of the top central universities, you must start preparing early!

1 *Understand the Exam Pattern*

Though the number of questions is the same, the paper pattern differs for each college. Therefore, knowing the paper pattern for the particular college plays a vital role in qualifying for the entrance exam.

As per the CUET Exam Pattern, the entrance exam will include four sections:

- Section 1 A:13 Languages
- Section 1 B:20 Languages
- Section 2: Domain-specific test
- Section 3:General test

Knowing the specific exam pattern for the college you have applied to is also important. Visit the official website of the CUET to know the exam pattern for the respective colleges you have applied to. Only then start with your preparations.

2 *Know your Syllabus*

Once you understand your exam pattern, the second step is to list down the syllabus, so you know what to study. Visit the official website of CUET; it has the respective syllabus for the course and the college.

Note that the syllabus may differ for every college. Therefore, it is important to carefully review and double-check your syllabus before you start your preparations.

3 *Schedule a TimeTable*

Scheduling is something that will give fantastic results if you plan it properly. However, preparing a study plan is one of the most challenging tasks for most.

- Your everyday schedule should have time for CUET exam preparation.
- Initially, you can give 1-2 hours for the entrance exam and the rest for the board exams.
- Once the board exams get over, you can utilize the maximum of your time for the NTA CUET exam prep.

4 *Make a List of Colleges You wish to Target*

- Before starting your preparation, you must make a CUET Colleges and course list.
- Then, understand the previous year's cut-off and position of the counselling for the particular college.
- Doing this will help you understand the marks you must score in the CUET exam to get admission to a particular course in your desired college, thus helping you enhance your preparation levels for the upcoming exam.

5

Newspaper Should Be Your New Friend

- Reading the newspaper will help improve your vocabulary, grammar, and reading comprehension skills.
- To improve your English language, you can refer to the Hindu or the Time of India newspapers.
- You can prefer to read the Dainik Bharat newspaper to improve your Hindi language.
- You must spend at least 30 minutes analyzing and reading the newspaper's editorial page.

6

Practice Mock Tests

- Working on the concepts and writing mock tests based on the exam pattern is essential, as it will help you understand your strengths and weak areas, which can be improved.
- Take up at least one CUET Mock Test every week and try to analyze your performance after completing the mock test.
- Also, try to attempt as many MCQs as possible from your board exam topics. Gradually increase the number of mocks you take.

7

Revision

You should not pick a fresh topic to study at the last minute of preparations. The last days are meant for only revision, so you can revise and remember the topics you have already learned.

Revision is extremely important to have a good score. Studying without revision is "working hard, but without a plan"!

Preparation Tips for the CUET Domain-Specific Test?

The domain specific-test of the CUET entrance exam will have 27 subjects, out of which you have to choose six domains that you wish to pursue in your UG course.

The standard of questions in this section is of class 12 level. Therefore, knowing the fundamental concepts of your chosen subject will help you score well in this section.

Also, you must choose the subjects you feel are very interesting and enjoy studying in the morning. Try to attempt easy, moderate, and challenging level MCQ questions from the NCERT textbooks.

Preparation Tips for NTA CUET 2024 along with Board Exams?

You can succeed in both CUET and board exams if you are good at time management. Also, you can score better if you are consistent throughout your preparation.

A proper study plan and preparation strategies will help you Manage boards and CUET preparation together.

When preparing the timetable, focus on keeping separate time for board preparation, CUET domain-specific preparation, and lastly, allot separate time to solve the aptitude section.

Board exams must be your priority, and you should work on enhancing your domain subject knowledge during your board exam preparation. And do this till the board exams are over.

After completing your board exams, you will have roughly 30-40 days to prepare for the Common Universities Entrance Test. So, utilize this entire month to enhance your preparation levels for CUET.

CUET Preparation Tips 2024: Best Books

Opting for the right book is very important to understand the concepts in-depth and score good marks in the upcoming exam.

The following are some of the best CUET Preparation Books you can include during your preparation.

- Arihant's English Grammar & Composition by S.C. Gupta
- Arihant's Test of Arithmetic & General Knowledge by Manohar Pandey
- Arihant's CUET (UG) Self Study Guides

Is It Useful To Solve Mock Tests for CUET Exam 2024?

According to the CUET preparation tips 2024, attempting mock tests is one of the best methods to improve your speed and accuracy in the final exam.

- With the help of mock tests, you can know the difficulty level of the paper and the type of questions asked in the exam.
- You can test your preparation levels for the upcoming exam.
- Most importantly, it can help improve your confidence levels.

Conclusion

"Kya CUET bohot tough hai?", nahi bilkul bhi nahi. If you know and follow the right preparation strategy, there is nothing called as tough. In fact, CUET is in a nurturing phase, so it's not a very tough exam to crack. If you are willing and determined, you can easily crack the CUET 2024 exam. These CUET Preparation Tips are specially curated for CUET 2024 aspirants to help you use the right strategies for the exam.

Syllabus

SECTION B1 : Physics

Unit I: Electrostatics

Electric charges and their conservation. Coulomb's law – force between two point charges, forces between multiple charges, superposition principle, and continuous charge distribution.

Electric field, electric field due to a point charge, electric field lines; electric dipole, electric field due to a dipole; torque on a dipole in a uniform electric field.

Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet, and uniformly charged thin spherical shell (field inside and outside).

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, the electrical potential energy of a system of two point charges, and electric dipoles in an electrostatic field.

Conductors and insulators, free charges, and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, the combination of capacitors in series and in parallel, the capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor, Van de Graff generator.

Unit II: Current Electricity

Electric current, the flow of electric charges in a metallic conductor, drift velocity and mobility, and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity.

Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.

The internal resistance of a cell, potential difference, and emf of a cell, combination of cells in series and in parallel.

Kirchhoff 's laws and simple applications. Wheatstone bridge, Metre Bridge.

Potentiometer – principle, and applications to measure potential difference, and for comparing emf of two cells; measurement of internal resistance of a cell.

Unit III: Magnetic Effects of Current and Magnetism

Concept of the magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop.

Ampere's law and its applications to infinitely long straight wire, straight and toroidal solenoids. Force on a moving charge in uniform magnetic and electric fields. Cyclotron.

Force on a current-carrying conductor in a uniform magnetic field. The force between two parallel current carrying conductors – definition of ampere. Torque experienced by a current loop in a magnetic field; moving coil galvanometer – its current sensitivity and conversion to ammeter and voltmeter.

Current loop as a magnetic dipole and its magnetic dipole moment. The magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements.

Para-, dia- and ferromagnetic substances, with examples. Electromagnets and factors affecting their strengths. Permanent magnets.

Unit IV: Electromagnetic Induction and Alternating Currents

Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance.

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattless current. AC generator and transformer.

Unit V: Electromagnetic Waves

Need for displacement current. Electromagnetic waves and their characteristics (qualitative ideas only).

Transverse nature of electromagnetic waves.

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses.

Unit VI: Optics

Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection, and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula. Magnification, power of a lens, combination of thin lenses in contact combination of a lens and a mirror. Refraction and dispersion of light through a prism.

Scattering of light–blue colour of the sky and reddish appearance of the sun at sunrise and sunset.

Optical instruments: Human eye, image formation, and accommodation, correction of eye defects (myopia and hypermetropia) using lenses.

Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Wave optics: Wave front and Huygens' Principle, reflection, and refraction of plane wave at a plane surface using wave fronts.

Proof of laws of reflection and refraction using Huygens' Principle.

Interference, Young's double hole experiment and expression for fringe width, coherent sources, and sustained interference of light.

Diffraction due to a single slit, width of central maximum.

Resolving the power of microscopes and astronomical telescopes. Polarisation, plane polarised light; Brewster's law, uses of plane polarised light and Polaroids.

Unit VII: Dual Nature of Matter and Radiation

Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation – particle nature of light.

Matter waves – wave nature of particles, de-Broglie relation. Davisson-Germer experiment (experimental details should be omitted; only the conclusion should be explained.)

Unit VIII: Atoms and Nuclei

Alpha - particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, isotopes, isobars; isotones.

Radioactivity – alpha, beta, and gamma particles/ rays, and their properties; radioactive decay law.

Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission and fusion.

Unit IX: Electronic Devices

Energy bands in solids (qualitative ideas only), conductors, insulators, and semiconductors; semiconductor diode – I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. Logic gates (OR,AND, NOT, NAND and NOR). Transistor as a switch.

Unit X: Communication Systems

Elements of a communication system (block diagram only); bandwidth of signals (speech, TV, and digital data); bandwidth of transmission medium. Propagation of electromagnetic waves in the atmosphere, sky, and space wave propagation. Need for modulation. Production and detection of an amplitude-modulated wave.

CUET (UG) Section II DOMAIN SCIENCE

SOLVED PAPER

2023-22

SOLVED PAPER 2023

NTA CUET (UG)
PHYSICS

Instructions

- Attempt any 40 out of the given 50 questions. No mark will be given to unanswered for review questions.
- Each question carries 5 marks. Negative marking of 1 mark for a wrong answer.

Time : 45 Min
MM : 200

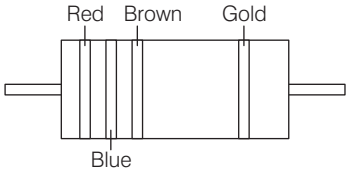
1. A body is charged to $+3.2\mu C$ by induction, then number of electrons transferred by the body is
[Take, charge on one electron $(e) = 1.6 \times 10^{-19}$ C]

(a) 2×10^{13} (b) 10^{13}
(c) 6.4×10^{25} (d) 0

2. When a series combination of two uncharged capacitors is connected to a 12 V battery, 173 μJ of energy is drawn from the battery. If one of the capacitors has a capacitance of 4μF, the capacitance of the other capacitor (in μF) is

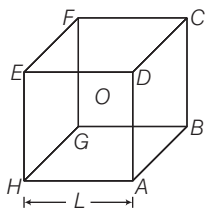
(a) 8 (b) 4 (c) 2 (d) 6

3. A carbon resistor has coloured bands as shown in figure below. The resistance of the resistor is



(a) $26\ \Omega \pm 10\%$ (b) $26\Omega \pm 5\%$
(c) $260\Omega \pm 5\%$ (d) $260\Omega \pm 10\%$

4. A short electric dipole which consists of two point charges $-q$ and $+q$, is placed at the centre O and inside a large cube $(ABCDEFGH)$ of length L as shown in the figure. The electric flux emanating through the cube is



(a) $q/4\pi\varepsilon_0$ (b) zero
(c) $q/2\pi\varepsilon_0$ (d) $q/3\pi\varepsilon_0$

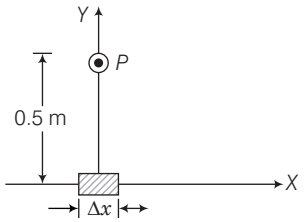
5. Two electric dipoles of moment p and $64p$ are placed in opposite direction on a line at a distance of 25 cm. The electric field will be zero at point between the dipoles whose distance from the dipole of moment p is

(a) 5 cm (b) $\frac{25}{9}$ cm
(c) 10 cm (d) $\frac{4}{13}$ cm

6. A body has a positive charge of 8×10^{-19} C. It has

(a) an excess of 5 electrons
(b) a deficiency of 5 electrons
(c) an excess of 8 electrons
(d) a deficiency of 8 electrons

7. An element $\Delta I = \Delta x\ \hat{\mathbf{i}}$ is placed at the origin and carries a current $I = 10$ A.



If $\Delta x = 1$ cm, magnetic field at point P is

(a) $4 \times 10^{-8}\ \hat{k}$ T
(b) $4 \times 10^{-8}\ \hat{i}$ T
(c) $4 \times 10^{-8}\ \hat{j}$ T
(d) $-4 \times 10^{-8}\ \hat{j}$ T

8. In a moving coil galvanometer of coil of N turns of area A have a spring of stiffness k. If coil is deflected by some angle ϕ due to flow of I current in uniform radial magnetic field B, then

(a) $\phi = \left(\frac{NAB}{k}\right) I$ (b) $\phi = \left(\frac{k}{BNA}\right) I$

(c) $\phi = \left(\frac{kA}{BN}\right) I$ d) $\phi = \left(\frac{BN}{kA}\right) I$

9. For a toroid, magnetic field strength in the region enclosed by wire turns is given by

(a) $B = \mu_0 n I$, where n = number of turns

(b) $B = \mu_0 I/n$, where n = number of turns per metre

(c) $B = \frac{\mu_0 I}{2r}$, where r = mean radius

(d) $B = \frac{\mu_0 NI}{2\pi r}$, where N = number of turns and r = radius of toroid

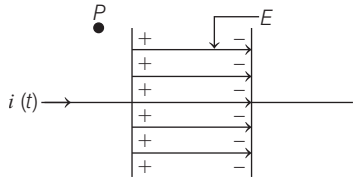
10. If an ammeter is connected in parallel to a circuit, it is likely to be damaged due to excess

(a) Current (b) Voltage
(c) Resistance (d) All of these

11. A voltage of peak value 283 V and varying frequency is applied to a series L-C-R combination in which $R = 3\,\Omega$, $L = 25$ mH and $C = 400\,\mu$F. Then, the frequency (in Hz) of the source at which maximum power is dissipated in the above is

(a) 51.5 Hz (b) 50.7 Hz (c) 51.1 Hz (d) 50.3 Hz

12. In the given figure, for which configuration, the magnetic field (say at point P) outside the plates of the capacitor is to be same everywhere?



(a) Plane circular loop perpendicular to wire
(b) Plane circular loop parallel to wire
(c) Pot like surface with bottom between the plates
(d) Tiffin box like shape (without the lid)

13. A moving electron enters a uniform and perpendicular magnetic field. Inside the magnetic field, the electron travels along

(a) a straight line (b) a parabola
(c) a circle (d) a hyperbola

14. In a plane electromagnetic wave, the electric field oscillates sinusoidally at a frequency of 2.0×10^{10} Hz and amplitude 48 Vm^{-1}. What is the amplitude of the oscillating magnetic field?

(a) 0.8×10^{-7} T (b) 1.6×10^{-7} T
(c) 3.2×10^{-8} T (d) 6.4×10^{-8} T

15. If lower half of a concave mirror is blackened, then

(a) image distance increases
(b) image distance decreases
(c) image intensity increases
(d) image intensity decreases

16. A convex lens of focal length 40 cm, a concave lens of focal length 40 cm and a concave lens of focal length 15 cm are placed in contact. The power of the combination (in Dioptre) is

(a) + 1.5 (b) − 1.5 (c) + 6.67 (d) − 6.67

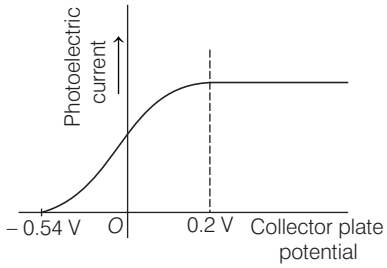
17. What focal length should the reading spectacles have for a person for whom the least distance of distinct vision is 50 cm?

(a) + 50 cm (b) − 75 cm (c) − 50 cm (d) + 75 cm

18. Free electrons cannot normally escape out of metal surface because

(a) free electrons are bounded to one or other ionic core
(b) free electrons lie deep inside atom
(c) free electrons are held in metal lattice by attraction force of protons
(d) if an electron attempts to come out of metal, the metal surface acquires a positive charge and pulls the electron back to metal

19. The value of stopping potential V_0 from the given graph is



(a) − 0.54 V (b) 0.54 V
(c) 0.2 V (d) − 0.2 V

20. If h is Planck's constant, the momentum of a photon of wavelength 1 Å is

(a) $10^{10}\,h$ (b) h (c) $10^{2}\,h$ (d) $10^{12}\,h$

21. α-particles are scattered due to

(a) attraction of electrons
(b) repulsion of nucleus
(c) Both (a) and (b)
(d) gravitational pull of neutrons

22. Highest energy level of an electron corresponds to $n = \infty$ and it has an energy of

(a) zero (b) ∞ (c) 13.6 eV (d) − 13.6 eV