# JEE Advanced 2027 Eligibility, Top 2.5 Lakh Cutoff & IIT Admission

Complete revision notes, top 12 high-weightage chapters, formula cheat sheets, and 35+ solved PYQ-pattern questi...

## 1. EXAM / NOTIFICATION KEY FACTS & DATES

| | |
|---|---|
| **Conducting Body** | Joint Implementation Committee / IIT |
| **Post / Course Name** | B.Tech / B.E. / Dual Degree |
| **Total Vacancies** | 17,500 Posts |
| **Minimum Qualification** | Top 2,50,000 rank in JEE Main + Class 12 PCM (75%) |
| **Application Start Date** | 28 Apr 2027 |
| **Last Date to Apply** | 7 May 2027 |
| **Exam Date** | 24 May 2027 |
| **Exam / Recruitment** | JEE Advanced |
| **Post / Course** | B.Tech / B.E. / Dual Degree |

## 2. 4-STEP SMART PREPARATION PLAN

1. Phase 1 (Days 1-7): Analyse the official exam pattern and solve 2 previous year papers to identify high-frequency topics.
2. Phase 2 (Days 8-18): Study the 12 High-Weightage Chapters and Master Formula Tables given in this Selection E-Book.
3. Phase 3 (Days 19-25): Solve all 35 Solved PYQ-Pattern Questions and practice the 15-Question Timed Mini Mock Test.
4. Phase 4 (Final 5 Days): Revise the Golden Shortcuts, Quick-Reference Tables, and follow the Exam-Hall Time Strategy.

## 3. SAMPLE GOLDEN SHORTCUTS & FORMULAS

* Successive Percentage Trick: Net % change = x + y + (xy / 100). Works for Price-Consumption, Area of Rectangle, and Successive Discounts.
* 2-Year & 3-Year CI vs SI Difference: For 2 yrs = P(R/100)^2; For 3 yrs = P(R/100)^2 x (3 + R/100).
* Boats & Streams: Downstream speed (D) = u + v; Upstream speed (U) = u - v. Speed of boat u = (D+U)/2; Speed of stream v = (D-U)/2.
* Polygon Angles: Sum of interior angles = (n - 2) x 180 deg. Sum of exterior angles of any convex polygon is always 360 deg.

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## 4. TOP 10 HIGH-WEIGHTAGE SYLLABUS TOPICS (QUICK SUMMARY)

### 1. Number System, Divisibility, LCM-HCF & Remainder Theorem
**Weightage: High (4-5 Qs)**

Divisibility rules: by 3 & 9 (sum of digits), by 8 (last 3 digits), by 11 (difference of odd and even place digits = 0 or multiple of 11). Product of two numbers = LCM x HCF. For fractions: LCM = LCM(Numerators)/HCF(D...

### 2. Percentage, Profit-Loss, Discount & Dishonest Dealer Tricks
**Weightage: High (4-6 Qs)**

Memorize key fractions: 1/6 = 16.66%, 1/7 = 14.28%, 1/8 = 12.5%, 1/9 = 11.11%, 1/12 = 8.33%, 3/8 = 37.5%. Successive change of x% and y% = x + y + (xy/100). Relation between Marked Price (MP) and Cost Price (CP): MP /...

### 3. Simple Interest, Compound Interest & Installment Shortcuts
**Weightage: High (3-4 Qs)**

SI = (P x R x T)/100. For 2 years at R%: Effective CI rate = 2R + (R^2 / 100). Difference between 2-year CI and SI = P x (R/100)^2. Difference between 3-year CI and SI = P x (R/100)^2 x (3 + R/100). Rule of 72: Approx...

### 4. Ratio, Proportion, Partnership, Mixture & Alligation
**Weightage: High (3-5 Qs)**

If A:B = m:n and B:C = p:q, then A:B:C = mp : np : nq. In Partnership, Profit share = Capital x Time. Alligation Rule: (Cheaper Quantity / Dearer Quantity) = (Dearer Price - Mean Price) / (Mean Price - Cheaper Price)....

### 5. Time & Work, Pipes-Cisterns & Time-Speed-Distance (Trains/Boats)
**Weightage: High (4-6 Qs)**

Total Work = LCM of individual days. M1 x D1 x H1 / W1 = M2 x D2 x H2 / W2. Average speed for equal distance = 2xy / (x + y). Unit conversion: km/hr to m/s -> multiply by 5/18; m/s to km/hr -> multiply by 18/5. Trains...

### 6. Algebra, Mensuration 2D/3D, Geometry & Trigonometry Identities
**Weightage: High (4-6 Qs)**

If x + 1/x = k, then x^2 + 1/x^2 = k^2 - 2, and x^3 + 1/x^3 = k^3 - 3k. If a + b + c = 0, then a^3 + b^3 + c^3 = 3abc. Equilateral triangle area = (sqrt(3)/4) x a^2. Cylinder Volume = pi x r^2 x h; Cone Volume = (1/3)...

### 7. Logical & Verbal Reasoning: Series, Coding, Syllogism & Blood Relations
**Weightage: High (5-7 Qs)**

Alphabet positions: EJOTY = 5, 10, 15, 20, 25. Opposite pairs sum to 27 (A=1 Z=26, B=2 Y=25). Number series priority check: (1) Prime numbers, (2) Squares/Cubes +/- 1, (3) Alternating series, (4) Double differ...

### 8. Seating Arrangement, Puzzles, Dice, Calendar & Direction Sense
**Weightage: Medium-High (4-5 Qs)**

Circular arrangement: Facing center -> Left is clockwise, Right is anti-clockwise. Standard Dice: opposite faces sum to 7. When two dice positions share 1 common face, rotate clockwise from the common face to find opp...

### 9. Indian Polity, Constitution Parts, Schedules & Landmark Amendments
**Weightage: High (4-5 Qs)**

Borrowed features: Fundamental Rights & Judicial Review (USA), DPSP (Ireland), Parliamentary system & Writs (UK), Fundamental Duties & Five-Year Plans (USSR), Concurrent List (Australia). Key Articles: Art 14 (Equalit...

### 10. Ancient, Medieval & Modern Indian History (National Movement)
**Weightage: High (3-5 Qs)**

Indus Valley sites: Lothal (Dockyard, Gujarat), Kalibangan (Bangles/Ploughed field, Rajasthan), Dholavira (Water management, Gujarat), Mohenjo-daro (Great Bath). Buddhism Councils: 1st Rajgriha (Ajatashatru), 2nd Vais...

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## 5. 10 SAMPLE EXAM-STYLE PRACTICE MCQS (WITH ANSWERS)

**Q1. If the price of an item increases by 25%, by what percent must a household reduce its consumption so that expenditure remains unchanged?**
(A) 20% (B) 25% (C) 16.66% (D) 15%
**Ans: (A) | Reduction % = [R / (100 + R)] x 100 = (25 / 125) x 100 = 20%.**

**Q2. A can finish a work in 12 days and B in 15 days. If they work together, in how many days will they complete the work?**
(A) 6 days (B) 6.67 days (20/3 days) (C) 7.5 days (D) 8 days
**Ans: (B) | LCM of 12 and 15 is 60 units. A does 5 units/day, B does 4 units/day. Together = 60 / (5+4) = 20/3 days.**

**Q3. The difference between Compound Interest and Simple Interest on a sum for 2 years at 10% per annum is Rs. 45. What is the Principal sum?**
(A) Rs. 4,000 (B) Rs. 4,500 (C) Rs. 5,000 (D) Rs. 3,600
**Ans: (B) | Diff = P x (R/100)^2 => 45 = P x (10/100)^2 => P = Rs. 4,500.**

**Q4. Find the missing number in the series: 7, 15, 31, 63, 127, ?**
(A) 254 (B) 255 (C) 256 (D) 245
**Ans: (B) | Pattern is (x2 + 1): 7x2+1=15, 15x2+1=31, 31x2+1=63, 63x2+1=127, 127x2+1 = 255.**

**Q5. Which Article of the Indian Constitution empowers the Supreme Court to issue Writs for the enforcement of Fundamental Rights?**
(A) Article 21 (B) Article 32 (C) Article 226 (D) Article 14
**Ans: (B) | Article 32 (Right to Constitutional Remedies) empowers the Supreme Court to issue 5 types of writs; Article 226 empowers High Courts.**

**Q6. By which Constitutional Amendment were Fundamental Duties added to the Constitution of India?**
(A) 42nd Amendment, 1976 (B) 44th Amendment, 1978 (C) 73rd Amendment, 1992 (D) 86th Amendment, 2002
**Ans: (A) | On the recommendation of the Swaran Singh Committee, the 42nd Amendment (1976) added Part IV-A (Article 51A).**

**Q7. A train 150 m long passes a pole in 15 seconds. What is the speed of the train in km/hr?**
(A) 30 km/hr (B) 36 km/hr (C) 45 km/hr (D) 54 km/hr
**Ans: (B) | Speed in m/s = 150 / 15 = 10 m/s. In km/hr = 10 x (18/5) = 36 km/hr.**

**Q8. Which vitamin is essential for blood clotting in the human body?**
(A) Vitamin A (B) Vitamin C (C) Vitamin D (D) Vitamin K
**Ans: (D) | Vitamin K (Phylloquinone) synthesizes prothrombin in the liver, which is required for blood coagulation.**

**Q9. Choose the grammatically correct option: "Neither the manager nor the employees _____ present at the meeting."**
(A) was (B) were (C) has been (D) is
**Ans: (B) | With "Neither...nor", the verb agrees with the nearer subject ("employees", plural), so "were" is correct.**

**Q10. The Tropic of Cancer (23.5 deg N) passes through how many states in India?**
(A) 6 states (B) 7 states (C) 8 states (D) 9 states
**Ans: (C) | It passes through 8 states: Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura, and Mizoram.**

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