

PYQSide

JEE MAIN MECHANICAL PROPERTIES OF FLUIDS — SURFACE TENSION AND SURFACE ENERGY — PYQS

Max. Marks: 28

Questions: 7

Section A (MCQ)

- Q.1** Eight mercury drops, each of radius r , coalesce to form a bigger drop. The surface energy released in this process is _____. (S is the surface tension of mercury).

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) $8\pi r^2 S$ (2) $16\pi r^2 S$ (3) $64\pi r^2 S$ (4) $4\pi r^2 S$

Scan or tap for the
full solution



- Q.2** A liquid drop of diameter 2 mm breaks into 512 droplets. The change in surface energy is $\alpha \times 10^{-6}$ J. The value of α is _____. (Take surface tension of liquid = 0.08 N/m)

[JEE Main 2026 (Online) 2nd April Morning Shift]

- (1) 10 (2) 7 (3) 8 (4) 11

Scan or tap for the
full solution



- Q.3** The surface tension of a soap bubble is 0.03 N/m. The work done in increasing the diameter of bubble from 2 cm to 6 cm is $\alpha\pi \times 10^{-4}$ J. The value of α is _____. (Take $\pi = 3.14$)

[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) 0.86 (2) 0.64 (3) 1.92 (4) 7.68

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- Q.4** Given below are two statements :

Statement-I: Pressure of a fluid is exerted only on a solid surface in contact as the fluid-pressure does not exist everywhere in a still fluid.

Statement-II: Excess potential energy of the molecules on the surface of a liquid, when compared to interior, results in surface tension.

In the light of the above statements, choose the correct answer from the options given below

[JEE Main 2026 (Online) 22nd January Morning Shift]

- (1) Statement-I is false but Statement-II is true
(2) Statement-I is true but Statement-II is false
(3) Both Statement-I and Statement-II are false
(4) Both Statement-I and Statement-II are true

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full solution



- Q.5** Two water drops each of radius ' r ' coalesce to form a bigger drop. If ' T ' is the surface tension, the surface energy released in this process is :

[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) $4\pi r^2 T[2 - 2^{1/3}]$ (2) $4\pi r^2 T[1 + \sqrt{2}]$
(3) $4\pi r^2 T[2 - 2^{2/3}]$ (4) $4\pi r^2 T[\sqrt{2} - 1]$

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Section B (Numerical)

- Q.6** The surface tension of a soap solution is 3.5×10^{-2} N/m. The work required to increase the radius of a soap bubble from 1 cm to 2 cm is $\alpha \times 10^{-6}$ J. The value of α is _____.

($\pi = 22/7$)

[JEE Main 2026 (Online) 4th April Morning Shift]

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- Q.7** A soap bubble of surface tension 0.04 N/m is blown to a diameter of 7 cm. If $(15000 - x)$ μ J of work is done in blowing it further to make its diameter 14 cm, then the value of x is _____.

($\pi = 22/7$)

[JEE Main 2026 (Online) 24th January Evening Shift]

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ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4	5						
Ans.	2	2	3	1	3						

Section B (Numerical)

Ques.	6	7					
Ans.	264	11304					