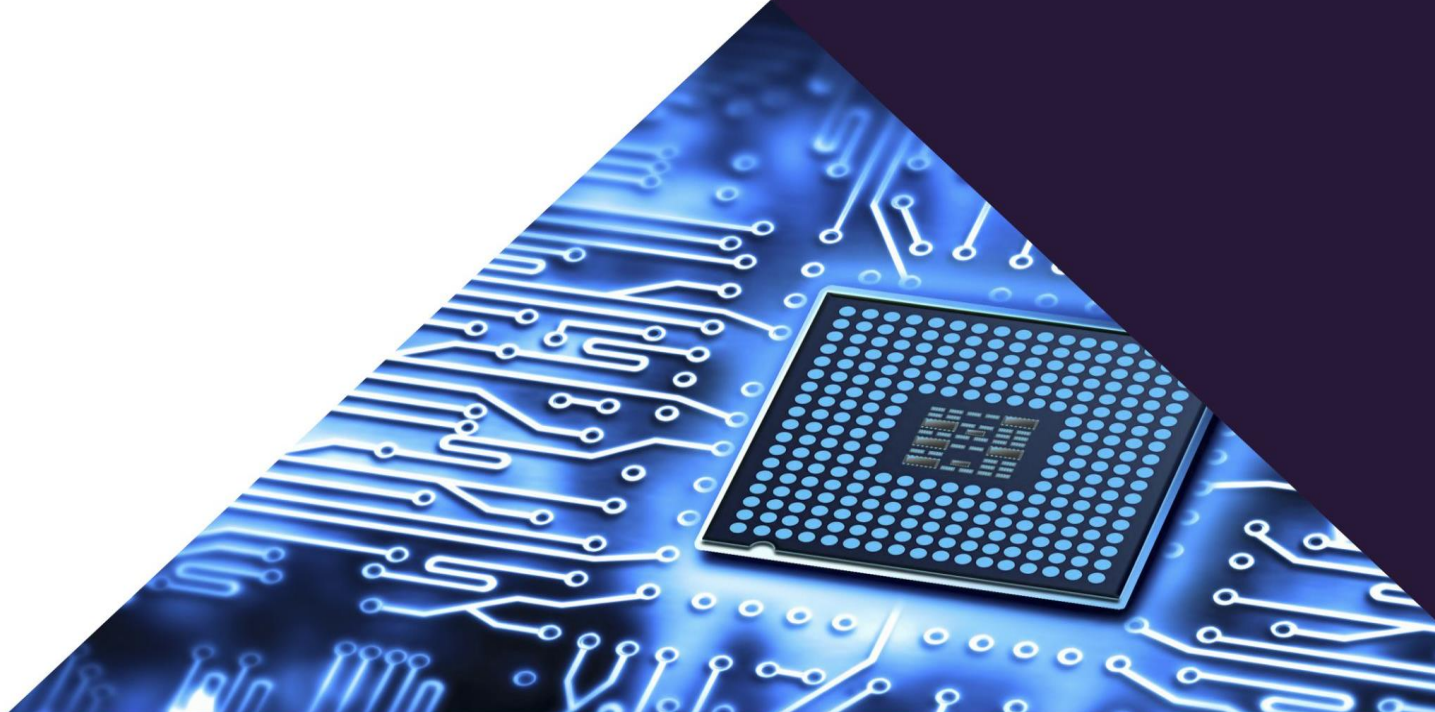


GATE 2020

Electronics
& Communication
Engineering

► **General Aptitude
Questions & Solutions**



1. The untimely loss of life is a cause of serious global concern as thousands of people get killed accidents every year while many other die diseases like cardiovascular
- A. from, from B. from, of
C. in, of D. during, from

Ans. C

Sol. The untimely loss of life is a cause of serious global concern as thousands of people get killed in accidents every year while many other die of diseases like cardiovascular

2. He was not only accused of theft of conspiracy.
- A. but even B. rather than
C. rather D. but also

Ans. D

Sol. He was not only accused of theft but also of conspiracy.

3. Select the word that fits the analogy:
Explicit: Implicit:: Express:
- A. Impress B. Compress
C. Suppress D. Repress

Ans. D

Sol. Explicit: Implicit:: Express: Repress

4. The Canadian constitution requires that equal importance be given to English and French. Last year, Air Canada lost a lawsuit, and had to pay a six-figure fine to a French-speaking couple after they filed complaints about formal in-flight announcements in English lasting 15 seconds, as opposed to informal 5 second messages in French,
The French-speaking couple were upset at
- A. the English announcements being clearer than the French ones.
B. the in-flight announcements being made in English.

- C. the English announcements being longer than the French ones.
D. equal importance being given to English and French.

Ans. C

Sol. The French-speaking couple were upset at the English announcements being longer than the French ones.

5. A super additive function $n f (.)$ satisfies the following property

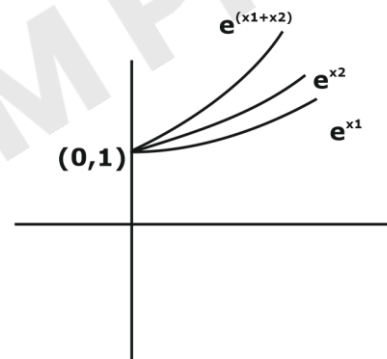
$$f(x_1 + x_2) \geq f(x_1) + f(x_2)$$

Which of the following functions is a super additive function for $x > 1$?

- A. e^x B. e^{-x}
C. $1/x$ D. \sqrt{x}

Ans. A

Sol. Let $x_2 > x_1$



Check

Let $x_2 = 3$

$x_1 = 2$

$e^{x_1+x_2} = e^5$

$e^{x_1} = e^2$

$e^{x_2} = e^3.$

Then $e^5 > e^2 + e^3$. Which is true

6. The global financial crisis in 2008 is considered to be the most serious world-wide financial crisis, which started with the sub-prime lending crisis in USA in 2007. The subprime lending crisis led to the banking crisis in 2008 with the

collapse of Lehman Brothers in 2008. The subprime lending refers to the provision of loans to those borrowers who may have difficulties in repaying loans, and it arises because of excess liquidity following the East Asian crisis.

Which one of the following sequences shows the correct precedence as per the given passage?

- A. Subprime lending crisis → global financial crisis → banking crisis → East Asian crisis.
- B. East Asian crisis → subprime lending crisis → banking crisis → global financial crisis.
- C. Banking crisis → subprime lending crisis → global financial crisis → East Asian crisis.
- D. Global financial crisis → East Asian crisis → banking crisis → subprime lending crisis.

Ans. B

Sol. East Asian crisis → subprime lending crisis → banking crisis → global financial crisis.

7. It is quarter past three in your watch. The angle between the hour hand and the minute hand

- A. 0°
- B. 22.5°
- C. 15°
- D. 7.5°

Ans. D

Sol. The time quarter past 3 is 3 : 15, i.e.,

$$h = 3$$

$$m = 15$$

The angle between the hour and minute hand will be:

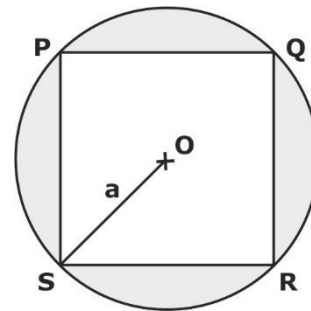
$$\theta = \left| \frac{11m}{2} - 30h \right|$$

$$\text{So, } \theta = \left| \frac{11 \times 15}{2} - 30 \times 3 \right|$$

$$\theta = 7.5^\circ$$

8. A circle with centre O is shown in the figure. A rectangle PQRS of maximum possible area is

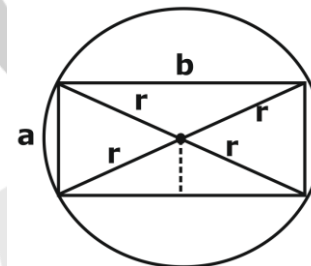
inscribed in the circle. If the radius of the circle is a, then the area of the shaded portion is



- A. $\pi a^2 - 3a^2$
- B. $\pi a^2 - 2a^2$
- C. $\pi a^2 - a^2$
- D. $\pi a^2 - \sqrt{2}a^2$

Ans. B

Sol.



$$r^2 = \frac{a^2}{4} + \frac{b^2}{4}$$

$$\therefore \frac{b^2}{4} = r^2 - \frac{a^2}{4}$$

$$b = \pm \sqrt{4r^2 - a^2}$$

$$b^2 = 4r^2 - a^2$$

$$\text{Area } A = ab$$

$$= \pm a \sqrt{4r^2 - a^2}$$

$$A^2 = a^2 (4r^2 - a^2)$$

$$\frac{dA^2}{da} 4r^2 \times 2a - 4a^3 = 0$$

$$4a (2r^2 - a^2) = 0$$

$$\Rightarrow a^2 = 2r^2$$

$$\therefore b^2 = 4r^2 - 2r^2 = 2r^2.$$

$$\therefore \text{area of rectangle} = (r\sqrt{2})^2 = 2r^2.$$

$$\text{area of circle} = \pi r^2.$$

$$\therefore \text{Required area} = (\pi - 2)r^2$$

9. a, b, c are real numbers. The quadratic equation $ax^2 - bx + c = 0$ has equal roots, which is β , then

- A. $b^2 \neq 4ac$
- B. $\beta^3 = bc / (2a^2)$
- C. $\beta = b / a$
- D. $\beta^2 = ac$

Ans. B

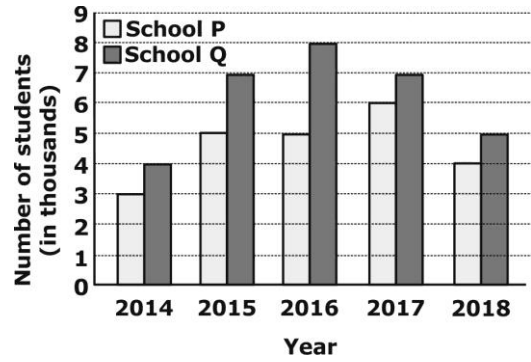
Sol. $Ax^2 - bx + c = 0$

$$2\beta = \frac{b}{a} \Rightarrow \beta = \frac{b}{2a} \text{-----(1)}$$

$$\beta^2 = \frac{c}{a} \text{-----(ii)}$$

$$(i) \times (ii) \text{ given } \beta^3 = \frac{bc}{2a^2}$$

10. The following figure shows the data of students enrolled in 5 years (2014 to 2018) for two schools P and Q. During this period, the ratio of the average number of the students enrolled in schools P to the average of the difference of the number of students enrolled in schools P and Q is



- A. 23 : 8
- B. 8 : 23
- C. 23 : 31
- D. 31 : 23

Ans.

Sol. No of students enrolled in P = 3 + 5 + 5 + 6 + 4 = 23

No of students enrolled in Q = 4 + 7 + 8 + 7 + 5 = 31

$$\therefore \text{ratio} = \frac{23 / 5}{(31 - 23) / 5} = \frac{23}{8} = 2.875$$
