**Q.1** The absorptive power (a) can be – [Except for the black body]

**(A)** $A \geq 1$ **(B)** $B > 1$ **(C)** $C < 1$ **(D)** None of these

**Q.2** The radiation pressure -

**(A)** Depends on the nature of the surface on which it is falling.

**(B)** Does not depend on the nature of the surface on which it is falling

**(C)** Does not depend on the source.

**(D)** None of these

**Q.3** If the absorptive power is $\mathbf{0.3}$ then for zero transmissivity, the reflective power is -

**(A)** 0.3 **(B)** 0.5 **(C)** 0.7 **(D)** 0.9

**Q.4** For a white body, the reflective power is -

**(A)** 0.5 **(B)** 0.7 **(C)** 0.8 **(D)** 1.0

**Q.5** Electromagnetic wave of intensity $\mathbf{1400\ W/m^2}$ falls on metal surface on area $\mathbf{1.5\ m^2}$ and is completely absorbed by it. Find out the force exerted by the beam.

**(A)** $14 \times 10^{-5}$ N **(B)** $14 \times 10^{-6}$ N **(C)** $7 \times 10^{-5}$ N **(D)** $7 \times 10^{-6}$ N

**Q.6** Light with an energy flux of $\mathbf{25 \times 10^4\ Wm^{-2}}$ falls on a perfectly reflecting surface at normal incidence. If the surface area is $\mathbf{15\ cm^2}$, the average force exerted on the surface is :

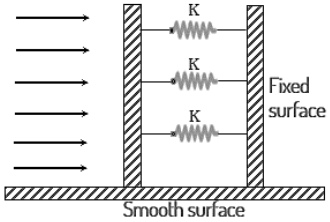
**(A)** $1.25 \times 10^{-6}$ N **(B)** $2.50 \times 10^{-6}$ N **(C)** $1.15 \times 10^{-6}$ N **(D)** $3.0 \times 10^{-6}$ N

**Q.7** A parallel beam of monochromatic light is incident normally on a perfectly reflecting surface. The incident radiation has the power as $\mathbf{2.1387 \times 10^{-27}\ W}$. The force exerted by the light beam on the surface by each photon is ($\mathbf{h = 6.63 \times 10^{-34}\ Js}$)

**(A)** $2.21 \times 10^{-19}$ N **(B)** $1.4 \times 10^{-19}$ N **(C)** $3.3 \times 10^{-24}$ N **(D)** $6.6 \times 10^{-24}$ N

**Q.8** Light of intensity, **I** is incident perpendicularly on a perfectly reflecting plate of area **A** kept in a gravity-free space. If the photons strike the plate symmetrically and initially the spring was at its natural length, find the maximum compression in the springs.

**(A)** $\frac{2IA}{3Kc}$ **(B)** $\frac{2IA}{Kc}$ **(C)** $\frac{4IA}{3Kc}$ **(D)** $\frac{IA}{3Kc}$




**Q.9** If a photon of intensity **I** falls on a surface at an angle $\mathbf{60}^\circ$ making with it having absorption coefficient$\mathbf{0.4}$, then radiation pressure exerted on the surface is-

**(A)** $\frac{0.4I}{c}$ **(B)** $\frac{7I}{20c}$ **(C)** $\frac{1.05I}{c}$ **(D)** $\frac{1.2I}{c}$

**Q.10** A light of intensity $\mathbf{8\ kWm^{-2}}$ falls on a plane mirror with reflection coefficient $\mathbf{r = 0.95}$. The angle of incidence is $\mathbf{60}^\circ$.The pressure exerted by the light on the mirror is

**(A)** $1.3 \times 10^{-5}\ Nm^{-2}$ **(B)** $0.3 \times 10^{-5}\ Nm^{-2}$ **(C)** $30 \times 10^{-5}\ Nm^{-2}$ **(D)** $1.3 \times 10^{-6}\ Nm^{-2}$

**ANSWER KEY**

| Q. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sol.** | (C) | (A) | (C) | (D) | (D) | (B) | (B) | (A) | (D) | (A) |