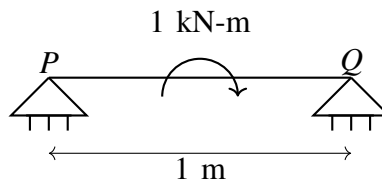


2011-ME-'1-13'

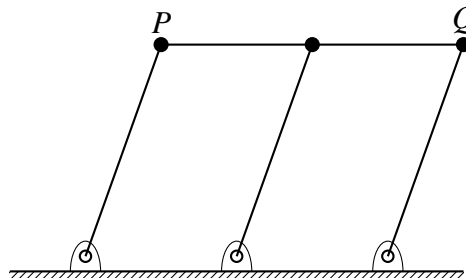
EE24BTECH11023

Q.1 - Q.25 Carry one mark each

- 1) A streamline and an equipotential line in a flow field
 - a) are parallel to each other
 - b) are perpendicular to each other
 - c) intersect at an angle
 - d) are identical
- 2) If a mass of moist air in an airtight vessel is heated to a higher temperature, then
 - a) specific humidity of the air increases
 - b) specific humidity of the air decreases
 - c) relative humidity of the air increases
 - d) relative humidity of the air decreases
- 3) In a condenser of a power plant, the steam condenses at a temperature 60°C . The cooling water enters at 30°C and leaves at 45°C . The logarithmic mean temperature difference (LMTD) of the condenser is
 - a) 16.2°C
 - b) 21.6°C
 - c) 30°C
 - d) 37.5°C
- 4) A simply supported beam PQ is loaded by a moment of 1 kN-m at the mid-span of the beam as shown in the figure. The reaction forces R_P and R_Q at the supports P and Q respectively are



- a) 1 kN downward, 1 kN upward
 - b) 0.5 kN upward, 0.5 kN downward
 - c) 0.5 kN downward, 0.5 kN upward
 - d) 1 kN upward, 1 kN upward
- 5) A double-parallelogram mechanism is shown in the figure. Note that PQ is a single link. the mobility of the mechanism is



- a) -1
b) 0
- c) 1
d) 2

6) The maximum possible draft in cold rolling of sheet increases with the

- a) increase in coefficient of friction
b) decrease in coefficient of friction
- c) decrease in roll radius
d) increase in roll velocity

7) The operation in which oil is permeated into the pores of a powder metallurgy product is known as

- a) mixing
b) sintering
- c) impregnation
d) infiltration

8) A hole is of dimension $\varnothing 9^{+0.015}_{+0}$ mm. The corresponding shaft is of dimension $\varnothing 9^{+0.010}_{+0.01}$ mm. The resulting assembly has

- a) loose running fit
b) close running fit
- c) transition fit
d) interference fit

9) Heat and work are

- a) intensive properties
b) extensive properties
- c) point functions
d) path functions

10) A column has a rectangular cross-section of $10\text{mm} \times 20\text{mm}$ and a length of 1 m. The slenderness ratio of the column is close to

- a) 200
b) 346
- c) 477
d) 1000

11) A series expansion for the function $\sin \theta$ is

- a) $1 - \frac{\theta^2}{2!} + \frac{\theta^4}{4!} - \dots$
b) $\theta - \frac{\theta^3}{3!} + \frac{\theta^5}{5!} - \dots$
- c) $1 + \theta + \frac{\theta^2}{2!} + \frac{\theta^3}{3!} + \dots$
d) $\theta + \frac{\theta^3}{3!} + \frac{\theta^5}{5!} + \dots$

12) Green sand mould indicates that

- a) polymeric mould has been cured
b) mould has been totally dried
- c) mould is green in colour
d) mould contains moisture

13) What is $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta}$ equal to?

- a) θ
b) $\sin \theta$
- c) 0
d) 1