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

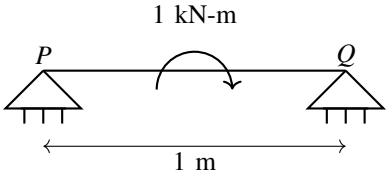
2) If a mass of moist air in an airtight vessel is heated to a higher temperature,then

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

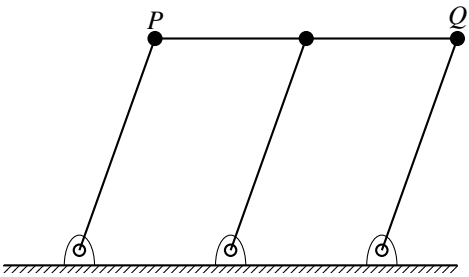
a) 16.2°C
b) 21.6°C
c) 30°C
d) 37.5°C

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 $\varnothing 9^{+0.010}_{+001}$ 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 $10mmx20mm$ 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) $1 - \frac{\theta^2}{2!} + \frac{\theta^4}{4!} - \cdots$
b) $\theta - \frac{\theta^3}{3!} + \frac{\theta^5}{5!} - \cdots$
c) $1 + \theta + \frac{\theta^2}{2!} + \frac{\theta^3}{3!} + \cdots$
d) $\theta + \frac{\theta^3}{3!} + \frac{\theta^5}{5!} + \cdots$

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 $\lim_{\theta \to 0} \frac{\sin\theta}{\theta}$ equal to?

a) θ
b) $\sin\theta$
c) 0
d) 1