2014
ME : Mechanical Engineering

AI24BTECH11022 - Pabbuleti Venkata Charan Teja

27) Which one of the following is a CFC refrigerant?

a) $R744$

b) $R290$

c) $R502$

d) $R718$

28) The jobs arrive at a facility, for service, in a random manner. The probability distribution of number of arrivals of jobs in a fixed time interval is

a) Normal

b) Poisson

c) Erlang

d) Beta

29) In exponential smoothening method, which one of the following is true?
a) $0 \leq \alpha \leq 1$ and high value of α is used for stable demand
b) $0 \leq \alpha \leq 1$ and high value of α is used for unstable demand
c) $\alpha \geq 1$ and high value of α is used for stable demand
d) $\alpha \leq 0$ and high value of α is used for unstable demand

30) For machining a rectangular island represented by coordinates $P(0,0)$, $Q(100,0)$, $R(100,50)$ and $S(0,50)$ on a casting using CNC milling machine, an end mill with a diameter of $16mm$ is used. The trajectory of the cutter centre to machine the island $PQRS$ is
a) $(-8,-8),(108,-8),(108,58),(-8,58),(-8,-8)$
b) $(8,8),(94,8),(94,44),(8,44),(8,8)$
c) $(-8,8),(94,0),(94,44),(8,44),(-8,8)$
d) $(0,0)(100,0),(100,50),(50,0),(0,0)$

31) Which one of the following instruments is widely used to check and calibrate geometric features of machine tools during their assembly?
a) Ultrasonic probe
b) Coordinate Measuring Machine (CMM)
c) Laser interferometer
d) Vernier calipers

32) The major difficulty during welding of aluminium is due to its

a) high tendency of oxidation

b) high thermal conductivity

c) low melting point

d) low density

33) The main cutting force acting on a tool during the turning (orthogonal cutting) operation of a metal is 400N. The turning was performed using 2mm depth of cut and 0.1mm/rev feed rate. The specific cutting pressure (in N/mm^2) is

a) 1000
b) 2000
c) 3000
d) 4000

34) The process of reheating the martensitic steel to reduce its brittleness without any significant loss in its hardness is

a) normalising
b) annealing
c) quenching
d) tempering

35) In solid-state welding, the contamination layers between the surfaces to be welded are removed by

a) alcohol
b) plastic deformation
c) water jet
d) sand blasting

36) The integral $\oint_c (ydx - xdy)$ is evaluated along the circle $x^2 + y^2 = \frac{1}{4}$ traversed in counter clockwise direction. The integral is equal to

a) 0
b) $-\frac{\pi}{4}$
c) $-\frac{\pi}{2}$
d) $\frac{\pi}{4}$

37) If $y = f(x)$ is the solution $\frac{d^2y}{dx^2} = 0$ with the boundary conditions $y = 5$ at $x = 0$, and $\frac{dy}{dx} = 2$ at $x = 10$, $f(15) =$ _____

38) In the following table, x is a discrete random variable and $p(x)$ is the probability density. The standard deviation of x is

x	1	2	3
$p(x)$	0.3	0.6	0.1

a) 0.18
b) 0.36
c) 0.54
d) 0.6

39) Using the trapezoidal rule, and dividing the interval of integration into three equal subintervals, the definite integral $\int_{-1}^{+1} |x|\, dx$ is _____