2013-XE

EE24BTECH11042- srujana

1) if $3 \leq X \leq 5$ and $8 \leq Y \leq 11$ then which of the following options is TRUE?
   a) $\frac{3}{5} \leq \frac{X}{Y} \leq \frac{8}{5}$
   b) $\frac{3}{11} \leq \frac{X}{Y} \leq \frac{5}{8}$
   c) $\frac{3}{11} \leq \frac{X}{Y} \leq \frac{8}{5}$
   d) $\frac{3}{5} \leq \frac{X}{Y} \leq \frac{8}{11}$
2) The headmaster _____ to speak to you.
   Which of the following options is incorrect to complete the above sentence?
   a) is waiting
   b) wants
   c) want
   d) was waiting
3) Mahatma Gandhi was known for his humility as
   a) he played an important role in humiliating exit of British from India.
   b) he worked for humanitarian causes.
   c) he displayed modesty in his interactions
   d) he was a fine human being
4) All engineering students (I) should learn mechanics, (II) mathematics and (III) how to do computation. (IV)
   Which of the above underlined parts of the sentence is not appropriate ?
   a) I b) II c) III d) IV
5) Select the pair that best expresses a relationship similar to that expressed in the pair: Water: pipe::
   a) cart: road
   b) electricity: wire
   c) sea: beach
   d) music: instrument
6) Velocity of an object find directly in upward direction is given by V=80-32t, where t (*time*) is in seconds. when will the velocity between $32 m/sec$ and $64\ m/sec$?

a) $(1, 3/2)$
b) $(1/2, 1)$
c) $(1/2, 1/3)$
d) $(1, 3)$

7) In a factory two machines M1 and M2 manufacture 60% and 40% of the autocomponents respectively. Out of the total production, 2% of M1 and 3% M2 are found to be defective. If a randomly drawn autocomponent from the combined lot is found defective, what is the probability that it was manufacturerd by M2?

a) 0.35 b) 0.45 c) 0.5 d) 0.4

8) Following table gives data on tourists from different countries visiting India in the year 2011.

Country	Number of Tourists
USA	2000
England	3500
Germany	1200
Italy	1100
Japan	2400
Australia	2300
France	1000

Which two countries contributed to one third of the total number of tourists who visited India in 2011?

a) USA and Japan
b) USA and Australia
c) England and France
d) Japan and Australia

9) If $|-2X + 9| = 3$ then the possible value $|-X| - X^2$ would be:

a) 30 b) -30 c) -42 d) 42

10) All professors are researchers
Some scientists are professors
Which of the given conclusions is logically valid and is inferred from the above arguments:

a) All scientists are researchers
b) All professors are scientists
c) Some researchers are scientists
d) No conclusion follows

11) The value of the integral $\int_0^1 \frac{1}{\sqrt{-\ln t}}\, dt$ is

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

12) Which of the following differential equations CAN NOT be reduced to two ordinary differential equations by the method of separation of variables?

a) $\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = 0$
b) $\frac{\partial^2 u}{\partial t^2} - \frac{\partial^2 u}{\partial x^2} = 0$
c) $\frac{\partial^2 u}{\partial t^2} + \frac{\partial^2 u}{\partial t \partial x} + \frac{\partial u}{\partial x} = 0$
d) $\frac{\partial^2 u}{\partial t^2} + \frac{\partial^2 u}{\partial t \partial x} + \frac{\partial^2 u}{\partial x^2} = 0$

13) The fourier series of the periodic function
$f(x) = |x|, -1 < x < 1, f(x+2) = f(x), x \in R$ is given by

$$\frac{1}{2} - \sum_{n=1}^{\infty} \frac{4\cos(2n-1)\pi x}{(2n-1)^2 \pi^2}$$

Using the above, the sum of the infinite series $1 + \frac{1}{3^2} + \frac{1}{5^2} + ...$ is

a) $\frac{\pi^2}{4}$ b) $\frac{3\pi^2}{8}$ c) $\frac{\pi^2}{8}$ d) $\frac{\pi^2}{2}$