

Assignment 3

EE24BTECH11049
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1 GENERAL APTITUDE

1.1 Carry One Mark each

- 1) "Going by the _____ that many hands make light work, the school _____ involved all the students in the task." The words that best fill the blanks in the above sentence are

(2018-XE)

- | | |
|-------------------------|-------------------------|
| a) principle, principal | c) principle, principle |
| b) principal, principle | d) principal, principal |

- 2) "Her _____ should not be confused with miserliness; she is ever willing to assist those in need."

The word that best fills the blank in the above sentence is

(2018-XE)

- | | |
|----------------|--------------|
| a) cleanliness | c) frugality |
| b) punctuality | d) greatness |

- 3) Seven machines take 7 minutes to make 7 identical toys. At the same rate, how many minutes would it take for 100 machines to make 100 toys?

(2018-XE)

- | | | | |
|------|------|--------|--------|
| a) 1 | b) 7 | c) 100 | d) 700 |
|------|------|--------|--------|

- 4) A rectangle becomes a square when its length and breadth are reduced by $10m$ and $5m$, respectively. During this process, the rectangle loses $650m^2$ of area. What is the area of the original rectangle in square meters?

(2018-XE)

- | | | | |
|---------|---------|---------|---------|
| a) 1125 | b) 2250 | c) 2924 | d) 4500 |
|---------|---------|---------|---------|

- 5) A number consists of two digits. The sum of the digits is 9. If 45 is subtracted from the number, its digits are interchanged. What is the number?

(2018-XE)

a) 63

b) 72

c) 81

d) 90

1.2 Carry two marks each

- 6) For integers a , b and c , what would be the minimum and maximum values respectively of $a + b + c$ if $\log |x| + \log |b| + \log |c| = 0$?

(2018-XE)

a) -3 and 3

b) -1 and 1

c) -1 and 3

d) 1 and 3

- 7) Given that a and b are integers and $a + a^2b^3$ is odd, which one of the following statements is correct?

a) a and b are both oddb) a and b are both evenc) a is even and b is oddd) a is odd and b is even

- 8) From the time the front of a train enters a platform, it takes 25 seconds for the back of the train to leave the platform, while travelling at a constant speed of $54 \frac{\text{km}}{\text{h}}$. At the same speed, it takes 14 seconds to pass a man running at $9 \frac{\text{km}}{\text{h}}$ in the same direction as the train. What is the length of the train and that of the platform in meters, respectively?

(2018-XE)

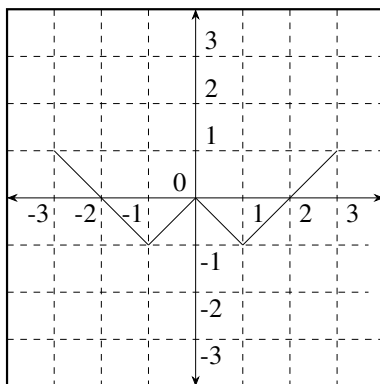
a) 210 and 140

c) 245 and 130

b) 162.5 and 187.5

d) 175 and 200

- 9) Which of the following functions describe the graph shown in the below figure?



(2018-XE)

a) $y = ||x| + 1| - 2$

c) $y = ||x| + 1| - 1$

b) $y = ||x| - 1| - 1$

d) $y = ||x - 1| - 1|$

10) Consider the following three statements:

- i Some roses are red
- ii All the flowers fade quickly
- iii some roses fade quickly

Which of the following statements can be logically inferred from the above statements?

(2018-XE)

- a) If (i) is true (ii) is false, then (iii) is false
- b) If (i) is true (ii) is false, then (iii) is true
- c) If (i) and (ii) is true, then (iii) is true
- d) If (i) and (ii) are false, then (iii) is false

2 XE - A

2.1 Carry One mark each

11) The largest interval in which the initial value problem

$$e^x \frac{d^2 y}{dx^2} + \frac{1}{x-5} \frac{dy}{dx} + (\sqrt{x})y = \ln x$$

$y(1) = 0$ and $\frac{dy}{dx}(1) = 1$ has a unique solution is

(2018-XE)

- a) $(-\infty, \infty)$
- b) $(-5, 5)$
- c) $(0, \infty)$
- d) $(0, 5)$

12) The sum of the roots of the indicial equation at $x = 0$ of the differential equation

$$x^3 \frac{d^2 y}{dx^2} + (x \sin x) \frac{dy}{dx} - (\tan x)y = 0, x > 0$$

is

(2018-XE)

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

13) let f be a three times continuously differentiable real valued function on $(0, 5)$ such that its third derivative $f'''(x) = \frac{1}{100} \forall x \in (0, 5)$. If $P(x)$ is a polynomial of the degree ≤ 2 such that $P(1) = f(1)$, $P(2) = f(2)$ and $P(3) = f(3)$ then $|f(4) - P(4)|$ equals

(2018-XE)