2014-MA-1-13

EE24BTECH11006 - Arnav Mahishi

1) A student is required to demonstrate a high level of comprehension of the subject, especially in the social sciences.
The word closest in meaning to comprehension is

a) understanding b) meaning c) comprehension d) stability

2) Choose the most appropriate word from the options given below to complete the following sentence.
One of his biggest _____ was his ability to forgive

a) vice b) virtues c) choices d) strength

3) Rajan was not happy that Sajan decided to do the project on his own. On observing his unhappiness, Sajan explained to Rajan that he preferred to work independently
Which one of the statements below is logically valid and can be inferred from the above sentences
a) Rajan has decided to work only in a group.
b) Rajan and Sajan were formed into a group against their wishes.
c) Sajan had decided to give in to Rajan's request to work with him.
d) Rajan had believed that Sajan and he would be working together.

4) If $y = 5x^2 + 3$, then the tangent at $x = 0, y = 3$

a) passes through $x = 0, y = 0$
b) has a slope of $+1$
c) is parallel to the x-axis
d) has a slope of -1

5) A foudry has a fixed daily cost of Rs $50,000$ whenever it operates and a variable cost of Rs $800Q$ where Q is the daily production in tonnes. What is the cost of production in Rs per tonne for a daily production of 100 tonnes?

a) 2000 b) 1300 c) 130 d) 1500

6) Find the odd one in the following group: ALRVX,EPVZB,ITZDF,OYEIK

a) ALRVX b) EPVZB c) ITZDF d) OYEIK

7) Anuj, Bhola, Chandan, Dilip, Eswar and Faisal live on different floors in a six-storeyed building (the ground floor is numbered 1, the floor above it 2, and so on). Anuj lives on an even-numbered floor. Bhola does not live on an odd-numbered floor.

Chandan does not live on any of the floors below Faisal's floor. Dilip does not live on floor number 2. Eswar does not live on a floor immediately above or immdiately below Bhola. Faisal lives three floors above Dilip. Which of the following floor-person combinations is correct?

	Anuj	Bhola	Chandan	Dilip	Eswar	Faisal
(*A*)	6	2	5	1	3	4
(*B*)	2	6	5	1	3	4
(*C*)	4	2	6	3	1	4
(*D*)	2	4	6	1	3	5

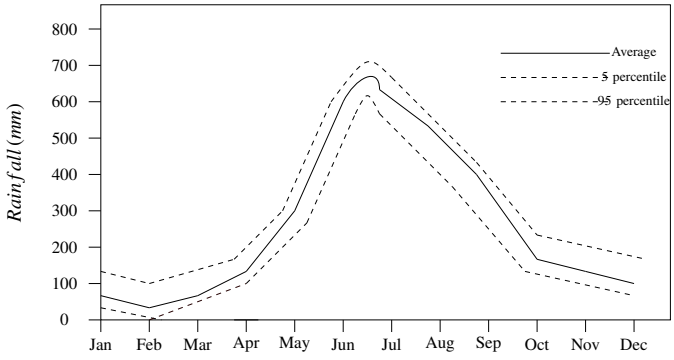
8) The smallest angle of a triangle is equal to two thirds of the smallest angle of a quadrilateral. The ratio between the angles of the quadrilateral is 3 : 4 : 5 : 6. The largest angle of the triangle is twice its smallest angle. What is the sum, in degrees, of the second largest angle of the triangle and the largest angle of the quadrilateral?

a) 180 b) 270 c) 300 d) 210

9) One percent of the people of country X are taller than 6 ft. Two percent of the people of country Y are taller than 6 ft. There are thrice as many people in country X as in country Y. Taking both countries together, what is the percentage of people taller than 6 ft?

a) 3.0 b) 2.5 c) 1.5 d) 1.25

10) The monthly rainfall chart based on 50 years of rainfall in Agra is shown in the following figure. Which of the following are true? (*k* percentile is value such that *k* percent of the data will fall below that value)



(*i*) On average it rains more in July than in December
(*ii*) Every year, the amount of rainfall in August is more than that in January
(*iii*) July rainfall can be estimated with better confidence than February rainfall
(*iv*) In August, there is at least 500mm of rainfall

a) (*i*) and (*ii*) b) (*i*) and (*iii*) c) (*ii*) and (*iii*) d) (*iii*) and (*iv*)

11) The function $f(z) = |z|^2 + i\bar{z} + 1$ is differentiable at

a) i b) 1 c) $-i$ d) no point in $\mathbb{C}$

12) The radius of convergence of power series $\sum_{n=0}^{\infty} 4^{(-1)^n n} z^{2n}$ is

a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) 1 d) $\frac{1}{3}$

13) Let E_1 and E_2 be two non empty subsets of a normed linear space X and let $E_1 + E_2 = \{x + y \in X : x \in E_1 \text{ and } y \in E_2\}$. Then which of the following statements in FALSE.

a) If E_1 and E_2 are convex, then $E_1 + E_2$ is convex
b) If E_1 or E_2 are open, then $E_1 + E_2$ is open
c) $E_1 + E_2$ must be closed if E_1 and E_2 are closed
d) If E_1 is closed and E_2 is compact, then $E_1 + E_2$ is closed