MA
2015

EE24BTECH11063 - Y.Harsha Vardhan Reddy

Q.1 TO Q.5 CARRY 1 MARK EACH

1) **Question Number: 1 Question Type : MCQ**
Choose the appropriate word/phrase, out of the four options given below, to complete the sentence:

Apparent lifelessness _____ dormant life.

a) harbours b) leads to c) supports d) affects

2) **Question Number: 2 Question Type : MCQ**
Fill in the blank with the correct idiom/phrase

That boy from the town was a _____ in the sleepy village.

a) dog out of forward
b) sheep from the heap
c) fish out of water
d) bird from the flock

3) **Question Number: 3 Question Type : MCQ**
Choose the statement where underlined word is used correctly.

a) When the teacher eludes to different authors, he is being elusive.
b) When the thief keeps eluding the police, he is being elusive.
c) Matters that are difficult to understand, identify or remember are allusive.
d) Mirages can be allusive, but a better way to express them is illusory.

4) **Question Number: 4 Question Type : MCQ**
Tanya is older than Eric.
Cliff is older than Tanya.
Eric is older than Cliff.

If the first two statements are true, then the third statement is:

a) True
b) False
c) Uncertain
d) Data insufficient

5) **Question Number: 5 Question Type : MCQ**
Five teams have to compete in a league, with every team playing every other team exactly once, before going to the next round. How many matches will have to be held to complete the league round of matches?

a) 20 b) 10 c) 8 d) 5

Q.6 TO Q.10 CARRY 2 MARKS EACH

6) **Question Number: 6 Question Type : MCQ**
Select the appropriate option in place of the underlined part of the sentence.

Increased productivity necessary reflects greater efforts made by the employees.

a) Increase in productivity necessary
b) Increase productivity is necessary
c) Increase in productivity necessarily
d) No improvement required

7) **Question Number: 7 Question Type : MCQ**
Given below are two statements followed by two conclusions. Assuming these statements to be true, decide which one logically follows.

Statements:

I. No manager is a leader.
II. All leaders are executives.

Conclusions:

I. No manager is an executive.
II. No executive is a manager.

a) Only conclusion I follows.
b) Only conclusion II follows.
c) Neither conclusion I nor II follows.
d) Both conclusions I and II follow.

8) **Question Number: 8 Question Type : NAT**
In the given figure8 angle Q is a right angle, $PS : QS = 3 : 1$, $RT : QT = 5 : 2$ and $PU : UR = 1 : 1$. If the area of triangle QTS is $20\,\text{cm}^2$, then the area of triangle PQR in cm^2 is _____.

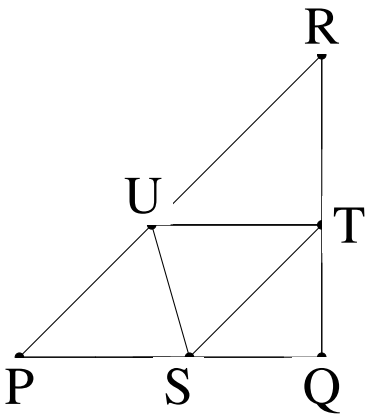

Fig. 8.

9) **Question Number: 9 Question Type : MCQ**
Right triangle PQR is to be constructed in the xy-plane so that the right angle is at P and line PR is parallel to the x-axis. The x and y coordinates of P, Q, and R are to be integers that satisfy the inequalities: $-4 \leq x \leq 5$ and $6 \leq y \leq 16$. How many different triangles could be constructed with these properties?

a) 110 b) 1,100 c) 9,900 d) 10,000

10) **Question Number: 10 Question Type : MCQ**
A coin is tossed thrice. Let X be the event that heads occur in each of the first two tosses. Let Y be the event that a tail occurs on the third toss. Let Z be the event that two tails occur in three tosses. Based on the above information, which one of the following statements is TRUE?

a) X and Y are not independent
b) Y and Z are dependent
c) Y and Z are independent
d) X and Z are independent

Q.11 to Q.35 carry 1 mark each

11) **Question Number: 11 Question Type : NAT**
Let $T : \mathbb{R}^4 \to \mathbb{R}^4$ be a linear map defined by

$$T(x, y, z, w) = (x + z, 2x + y + 3z, 2y + 2z).$$

Then the rank of T is equal to _____

12) **Question Number: 12 Question Type : NAT**
Let M be a 3×3 matrix and suppose that $1, 2$, and 3 are the eigenvalues of M. If

$$M^{-1} = \frac{M^2}{\alpha} - M + \frac{11}{\alpha} I_3$$

for some scalar $\alpha \neq 0$, then α is equal to _____.

13) **Question Number: 13 Question Type : NAT**
Let M be a 3×3 singular matrix and suppose that 2 and 3 are eigenvalues of M. Then the number of linearly independent eigenvectors of

$M^3 + 2M + I_3$
is equal to _____.