## MODEL QUESTIONS - MATHEMATICS

1) I) The coefficient of $x^{5}$ in $\left(1-x-x^{2}+x^{3}\right)^{6}$ is 20 .
II) If p and q are the coefficients of $x^{4}$ in $(1+x)^{2 n}$ and $(1+x)^{2 n-1}$ respectively then $2 \mathrm{p}=\mathrm{q}$.
Which of the above statements is/are true?
2) only I
3) Only II
4) Both I and II
5) Neither I nor II
2). Assertion (A): If $\mathrm{A}+\mathrm{B}=45^{\circ}$ then $(1+\operatorname{TanA})(1+\mathrm{TanB})=2$.

Reason(R): $\quad$ Tan $221 / 2^{\circ}=\sqrt{2}-1$.

1) Both (A) \& (R) are True and (R) is the correct explanation of (A).
2) Both $(A) \&(R)$ are True and (R) is not correct explanation of (A).
3) (A) is True but (R) is False.
4) (A) is False but (R) is True
5) Arrange the following statements in ascending order of their results
A) The order of $\left(\frac{d^{4} y}{d x^{4}}+\frac{d^{2} y}{d x^{2}}\right)^{3 / 2}=a\left(\frac{d^{3} y}{d x^{3}}\right)$
B) The degree of $\left(\frac{d y}{d x}+\frac{d^{2} y}{d x^{2}}\right)^{5 / 4}=a\left(\frac{d^{3} y}{d x^{3}}\right)^{2 / 3}$
C) The degree of $y=\left(1+\left(\frac{d y}{d x}\right)^{2}\right)^{3 / 2}\left(\frac{d^{2} y}{d x^{2}}\right)$
D) The order of $x^{3}+\left(\frac{d^{3} y}{d x^{3}}\right)^{2}+2 x^{2}\left(\frac{d^{2} y}{d x^{2}}\right)-3 y=x^{2}$
6) $D, C, B, A$
7) $D, C, A, B$
8) $C, D, B, A$
9) $C, D, A, B$
10) $\quad A$ and $B$ are two independent events of a sample space such that $P(A)=0.2, P(B)=0.5$.

## List I

A) $\mathrm{P}(\mathrm{B} / \mathrm{A})$
I) 0.2
B) $P(A / B)$
II) 0.1
C) $P(A \cap B)$
III) 0.3
D) $\mathrm{P}(\mathrm{A} \cup \mathrm{B})$
IV) 0.6
V) 0.5

The correct match is
1)
A
B
C
D
IV
V
III
I
2)
A
B
C
D

## Syllabus for TS EAMCET 2021-E Stream (Engineering Stream)

V I
II
IV
3)
A
B
C
D
III I II IV
4)
A
B
C
D
II I IV V
5) The line $a x+b y+c=0$ is a normal to the circle $x^{2}+y^{2}+4 x+6 y+8=0$ if and only if
(1) $2 a+3 b=c$
(2) $3 a+2 b=c$
(3) $2 a+3 b+c=0$
(4) $3 a+2 b+c=0$
6) $\left|\begin{array}{ccc}a l & b m & c n \\ l^{2} & m^{2} & n^{2} \\ 1 & 1 & 1\end{array}\right|=\Delta_{1}$ and $\left|\begin{array}{ccc}a & b & c \\ l & m & n \\ m n & l n & l m\end{array}\right|=\Delta_{2}$ then
(1) $\Delta_{1}=\Delta_{2}$
(2) $\Delta_{1}=2 \Delta_{2}$
(3) $2 \Delta_{1}=\Delta_{2}$
(4) $\Delta_{1}+\Delta_{2}=0$
7) If $\bar{a}$ is a non-zero vector and $\bar{b}, \bar{c}$ are two vectors such that $\bar{a} X \bar{b}=\bar{a} X \bar{c}$ and $\bar{a} \cdot \bar{b}=\bar{a} \cdot \bar{c}$ then

1) $\bar{b}-\bar{c}$ is collinear with $\bar{a}$
2) $\bar{b}-\bar{c}$ is perpendicular with $\bar{a}$
3) $\bar{b}=\bar{c}$
4) $\bar{b} \neq \bar{c}$
5) If $\mathrm{L}_{1}: 2 x+3 y-20=0, \mathrm{~L}_{2}: 2 x+3 y-14=0$, then the straight line represented by $a(2 x+3 y-20)+b(2 x+3 y-14)=0$ is
6) Parallel to $L_{1}=0$ and $L_{2}=0$.
7) Perpendicular to $L_{1}=0$ and parallel to $L_{2}=0$
8) Perpendicular to $L_{1}=0$ and $L_{2}=0$
9) Parallel to $L_{1}=0$ and Perpendicular to $L_{2}=0$
10) The interval in which $f(x)=x^{n}(x>0)$ is increasing in
11) $(0,1 / e)$
12) $(1 / e, \infty)$
13) $(-\infty, 1 / e)$
14) $(-1 / e, 1 / e)$
15) If $f: R \rightarrow R$ is such that $f(x+y)=f(x)+f(y)$ and $f$ is continuous at a point $a \in R$ then
16) $f$ is discontinuous function on $R$
17) $f$ is increasing function on $R$
18) $f$ is continuous on $R$
19) $f$ is decreasing on $R$

## MODEL QUESTIONS - PHYSICS

1. A particle performs simple harmonic motion with amplitude $\mathbf{A}$ and time period $\mathbf{T}$. The mean velocity of the particle over the time interval during which it travels a distance of $\mathbf{A} / \mathbf{2}$ starting from extreme position.
1) $A / T$
2) $2 \mathrm{~A} / \mathrm{T}$
3) $3 \mathrm{~A} / \mathrm{T}$
4) $\mathrm{A} / 2 \mathrm{~T}$
2. When a battery connected across a resistor of $16 \Omega$, the voltage across the resistor is 12 V . When same battery is connected across a resistor of $10 \Omega$ voltage across it is 11 V . The internal resistance of the battery
1) $10 / 7 \Omega$
2) $20 / 7 \Omega$
3) $25 / 7 \Omega$
4) $30 / 7 \Omega$
3. Assertion (A): A given force applied in turn to a number of different masses may cause the same rate of change in momentum in each, but not same acceleration to all.
Reason (R): For particles $\mathbf{F}=\frac{\boldsymbol{d} \boldsymbol{p}}{\boldsymbol{d} t}$ and $\mathbf{F}=\mathbf{m a}$ where the symbols have their usual meanings.
1) (A) is true \& (R) is true and $R$ is the correct explanation of (A)
2) (A) is true \& (R) is true and $R$ is not the correct explanation of (A)
3) (A) is true \& (R) is false
4) (A) is false \& (R) is true
4. Statement(A): A particle can have zero displacement and nonzero average velocity.

Statement (B): A particle can have zero acceleration and nonzero velocity
Statement (C): A particle can have zero velocity and non-zero acceleration.

1) A, B and C True
2) A and B True, C False
3) 3) B and C True, A False
1) A, B and C False.
5. Match the following:

In the experimental study of photoelectric effect:

| Column-I | Column-II |
| :--- | :--- |
| A. Intensity of incident light changes | I. Maximum K.E of photoelectrons changes |
| B. Frequency of incident light changes | II. Stopping potential changes |
| C. Target material changes | III. Saturation current changes. |


| 1. | A-III, | B-I,II | C-I,II |
| :--- | :--- | :--- | :--- |
| 2. | A-II, | B-I,III | C-I,II |
| 3. | A-III, | B-III,II | C-I,II |
| 4. | A-I, | B-I,II | C-I,II |

## Syllabus for TS EAMCET 2021-E Stream (Engineering Stream)

## MODEL QUESTIONS - CHEMISTRY

1. Half-life of a first order reaction is 15 min . The time required for completion of $87.5 \%$ of the reaction is
(1) 15 min
(2) 30 min
(3) 60 min
(4) 45 min
2. Arrange the following in increasing order of their basic strength.
I) $\mathrm{C}_{2} \mathrm{H}_{5} \mathrm{NH}_{2}$
II) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NH}_{2}$
III) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}_{2} \mathrm{NH}_{2}$
IV) $\left(\mathrm{C}_{2} \mathrm{H}_{5}\right)_{2} \mathrm{NH}$
(1) I $<$ II $<$ IV $<$ III
(2) II $<$ III $<$ I $<$ IV
(3) I $<$ IV $<$ III $<$ II
(4) IV $<$ I $<$ III $<$ II
3. Which of the following has least electron gain enthalpy?
(1) Sulphur
(2) Chlorine
(3) Fluorine
(4) Oxygen
4. Assertion (A): $\mathrm{H}_{2} \mathrm{O}$ is liquid and $\mathrm{H}_{2} \mathrm{~S}$ is gas at room temperature

Reason (R) : Molecules of $\mathrm{H}_{2} \mathrm{O}$ are highly associated through hydrogen bonding The correct answer is:
(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(3) (A) is true but (R) is false
(4) (A) is false but (R) is true
5. Match the following:

## LIST I (Crystal System)

(A) Cubic
(B) Hexagonal
(C) Monoclinic
(D) Triclinic

The correct match is:

| (1) | A | B | C | D |
| :---: | :---: | :---: | :---: | :---: |
|  | V | I | III | IV |
|  | A | B | C | D |
| (3) | A | B | C | D |
|  | V | I | IV | II |
| (4) | A | B | C | D |
|  | IV | II | V | III |
|  |  |  | $* * * * *$ |  |

## LIST II ( Axial Angle )

(I) $\alpha=\beta=90^{\circ} ; \gamma=120^{\circ}$
(II) $\alpha \neq \beta \neq \gamma \neq 90^{\circ}$
(III) $\alpha=\beta=\gamma \neq 90^{\circ}$
(IV) $\alpha=\gamma=90^{\circ} ; \beta \neq 90^{\circ}$
(V) $\alpha=\beta=\gamma=90^{\circ}$

The

