TS EAMCET May 10 Shift 1

Question Paper

Conducted by JNTU, Hyderabad

General Instructions

(i) The test is of 3 hours duration.

(ii) This test paper consists of 160 questions. The maximum marks are 720.

(iii) Physics and Chemistry contains 40 questions each and Mathematics contains 80 questions.

(iv) Each question carries +1 marks for correct answer and there is no negative marking for wrong answer.

Mathematics

1. $f:[-2,2]\to[-2,2]$, $g:[-2,2]\to[0,4]$ **are two functions defined as**

$$f(x)=\begin{cases}-2, & -2\le x\le 0\\ x^2-2, & 0\le x\le 2\end{cases}$$

and

$$g(x)=|f(x)|+f(|x|)$$

then

(A) f and g are injective mappings

(B) f and g are surjective mappings

(C) f is bijective mapping and g is injective mapping

(D) f is not bijective mapping and g is surjective mapping

2. The domain of the function

$$f(x) = \frac{1}{\sqrt{|x| - x}}$$

is

(A) $\mathbb{R}$

(B) $(-\infty, 0)$

(C) $(0, \infty)$

(D) $(-\infty, 1)$

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3. For any $n \in \mathbb{N}$,

$$4^n + 15n - 1$$

is divisible by

(A) 2

(B) 9

(C) 5

(D) 6

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4. If a function

$$f : (-1, 1) \to B(\subseteq \mathbb{R})$$

is defined as

$$f(x) = x + x^2 + x^3 + \cdots \infty$$

then in order to have the inverse function of f, $B =$

(A) $\left(-\infty, \frac{1}{2}\right)$

(B) $\left(-\frac{1}{2}, \infty\right)$

(C) $(-1, 1)$

(D) $\mathbb{R}$

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5. For all natural numbers n,

$$3\left(5^{2n+1}\right) + 2^{3n+1}$$

is divisible by

(A) 559

(B) 17

(C) 19

(D) 23

Physics

1. Which of the following is NOT a fundamental force in nature

(A) Weak Force

(B) Gravity

(C) Friction

(D) Electromagnetic

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2. The error in the measurement of the length and the breadth of a rectangular table is 1%. If the length and breadth of the table are $1\,\text{m}$ and $50\,\text{cm}$ respectively, then the area of the table including error is

(A) $(0.5 \pm 0.1)\,\text{m}^2$

(B) $(0.5 \pm 0.01)\,\text{m}^2$

(C) $(5000 \pm 10)\,\text{cm}^2$

(D) $(5000 \pm 1)\,\text{cm}^2$

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3. A ball is dropped from rest at time $t = 0$ from a certain height. A second ball is dropped from the same height at time $t = 1\,\text{s}$. At what time t, the distance between two balls becomes $10\,\text{m}$?

(A) $1.25\,\text{s}$

(B) $1.5\,\text{s}$

(C) $1.75\,\text{s}$

(D) $2\,\text{s}$

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4. Imagine a person standing on a weighing machine placed inside an elevator. The elevator first accelerates, then moves with a constant velocity and finally decelerates to stop. The

maximum and minimum weight recorded are $80\,\text{kg}$ and $64\,\text{kg}$ respectively. Find out the true weight of that person considering $g = 10\,\text{m/s}^2$.

(A) $70\,\text{kg}$

(B) $85\,\text{kg}$

(C) $72\,\text{kg}$

(D) $65\,\text{kg}$

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5. The energy (in eV) associated with the electron in the 1^{st} orbit of Li^{2+} is

(A) -122.4

(B) -61.15

(C) -30.5

(D) -244.6

Chemistry

1. How many of the following oxides are amphoteric?

$$\text{BeO; ZnO; } Sb_2O_3\text{; CO; CaO; } SO_2\text{; } SO_3$$

(A) 2

(B) 3

(C) 4

(D) 5

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2. Among the options, the element with highest electron gain enthalpy is

(A) He

(B) Ne

(C) Kr

(D) Xe

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3. 56 g of CaO has been mixed with 63 g of HNO_3, the amount of $Ca(NO_3)_2$ formed is

(A) 4 g

(B) 8.28 g

(C) 164 g

(D) 82 g

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4. The ratio of the viscosity (in centipoise) of D_2O to that of H_2O at $25^\circ C$ is

(A) 1

(B) 1.1

(C) 1.24

(D) 0.9

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5. The acceleration of a particle is increasing linearly with time as $6t$. The particle starts from the origin with an initial velocity 10 m/s. The distance travelled by the particle after 2 seconds will be

(A) 18 m

(B) 14 m

(C) 22 m

(D) 26 m
