

SAMPLE TEST

Total Time 90 Minutes

**Total Marks 100
No Negative Marking**

The BE Mechatronics Engineering admission test will consists of five sections namely Mathematics, Physics, Chemistry, English and IQ/General Knowledge based on multiple choice format.

MATHEMATICS

This part consists of questions from Intermediate/A-level mathematics. You have to choose the correct answer. You will be given 30 such questions.

Examples

1. If A is the area of a circle and C is its circumference then A =

- a. $\frac{1}{2\pi}C^2$
- b. $\frac{1}{4\pi}C^2$
- c. $2\pi C^2$
- d. $4\pi C^2$
- e. none of the above

The Correct answer is (b)

2. $\lim_{\theta \rightarrow 1} \frac{\sin 7\theta}{\theta} =$

- a. 0
- b. 1
- c. 7
- d. 1/7
- e. none of the above

The Correct answer is (c)

3. $\frac{d}{dx} \left(\sqrt{x} - \frac{1}{\sqrt{x}} \right)^2 =$

- a. $\frac{1}{2\sqrt{x}}$
- b. $1 + \frac{1}{x^2}$
- c. $1 - \frac{1}{x^2}$

- d. $1 + \frac{1}{2x}$
e. none of the above

The Correct answer is (b)

4. $\int e^{ax+b} dx =$

- a. $\frac{1}{a} e^{ax+b} + c$
b. $a e^{ax+b} + c$
c. $-a e^{ax+b} + c$
d. $-\frac{1}{a} e^{ax+b} + c$
e. none of the above

The Correct answer is (a)

5. If $e=1$ then the conic is
a. a circle
b. an ellipse
c. a parabola
d. a hyperbola
e. none of the above

The Correct answer is (c)

6. What is the mathematical average of the number of days in a typical year, the number of days in a week, and the number of hours in a day?
a. 100
b. 115
c. 132
d. 158
e. none of the above

The Correct answer is (c)

7. 8 15 9 14 10 13
a. 12
b. 9
c. 11
d. 15
e. none of the above

The Correct answer is (c)

8. A bag contains 30 balls, some of which are red and the remaining are blue. The probability of drawing red is $\frac{1}{6}$, then the number of blue balls are
- 20
 - 25
 - 24
 - 16
 - none of the above

The Correct answer is (b)

PHYSICS

In this section, you will be asked questions based on Intermediate/A-level Physics courses. You will be given 20 such questions.

1. In an equilibrium problem, the axis about which torques are computed
- must pass through the center of gravity of the body
 - must pass through one end of the body
 - must intersect the line of action of at least one force acting on the body
 - may be located anywhere
 - none of the above

The Correct answer is (d)

2. If you float in water with just your nose out, the average density of your body must be:
- as that of the water
 - greater than that of water
 - less than that of water
 - a and b
 - none of the above

The Correct answer is (b)

3. The refractive index of glass with respect to red light is
- greater than with respect to blue light
 - equal with respect to blue light
 - less than with respect to blue light
 - less than and equal to blue light
 - none of the above

The Correct answer is (c)

4. The variation of the speed of sound with temperature is greatest in
- metals
 - gases
 - solids

- d. liquids
- e. none of the above

The Correct answer is (b)

CHEMISTRY

In this section, you will be asked questions based on Intermediate/A-level Chemistry courses. You will be given 20 such questions.

1. Which of the following statement is correct? For a chemical reaction to occur molecules of substances must.
 - a. collide with each other
 - b. collide with energy more than activation energy
 - c. collide with energy less than activation energy
 - d. collide with high frequency
 - e. none of above

The Correct answer is (b)

2. Conduction of electricity through a gas may be studied at
 - a. high pressure
 - b. low pressure
 - c. moderate pressure
 - d. all of above
 - e. none of above

The Correct answer is (b)

3. A bond between two atoms may be obtained by sharing of electrons such a bond is called
 - a. an ionic bond
 - b. a coordinate bond
 - c. a dative bond
 - d. a covalent bond
 - e. none of above

The Correct answer is (d)

4. A catalyst is added to a system to change
 - a. the direction of the reaction
 - b. the rate of the reaction
 - c. the concentration of the reaction

- d. the molecularity of the reaction
- e. none of above

The Correct answer is (b)

English: SYNONYMS

Each question below consists of a word printed in capital letters, followed by a choice of words or phrase. Choose the word or phrase that is *nearest in meaning (synonym)* to the word in capital letters. You will be given 5 such questions.

Example:

GARGANTUAN

- a. Enormous
- b. Talkative
- c. Dangerous
- d. Courageous
- e. none of the above

The correct answer is (a)

English: INCOMPLETE SENTENCES

In this part each problem consists of an *incomplete sentence*. From the choices given, you should find the one choice which best *completes the sentence*. You will be given 5 such questions.

Example:

Because the United States has little tin, ----- produced in the rest of the world.

- a. tin is used
- b. it uses tin
- c. uses of tin
- d. uses tin
- e. none of the above

The correct answer is (b).

English: SAME RELATIONSHIPS

Each question below consists of a pair of words in capital letters, followed by a choice of pairs. Choose the pair that has *same relationship* as capital letters. You will be given 5 such questions.

Example:

WORKER: UNEMPLOYED

- a. crop : barren
- b. purchase : unnecessary
- c. effluence : confidence
- d. exile : country
- e. none of the above

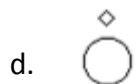
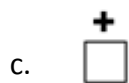
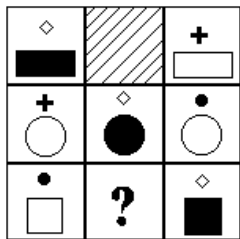
The correct answer is (a).

IQ/GENERAL KNOWLEDGE

In this section, you are required to choose the correct answer. You will be given 15 such questions.

Example

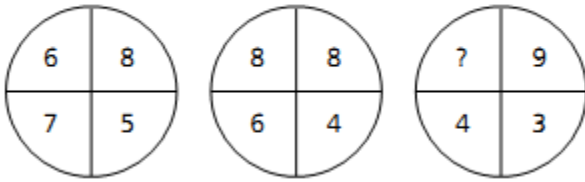
1. Find the figure continuing the series:



e. none of the above

The correct answer is (c).

2. What number should replace the question mark?



- a. 5
- b. 6
- c. 7
- d. 8
- e. none of the above

The correct answer is (b).

3. Which one of the following is least like the others?
INCH - MILE - ACRE - YARD - FOOT

- a. Inch
- b. Acre
- c. Mile
- d. Foot
- e. none of the above

The correct answer is (b).

4. 2016 Summer Olympics will be held at:

- a. Sydney
- b. Madrid
- c. Chicago
- d. Rio de Janeiro
- e. None of above

The correct answer is (d).

5. Centigrade & Fahrenheit scales give same reading at:

- a. -30°C
- b. -40°C
- c. -35°C
- d. -25°C
- e. None of above

The correct answer is (b).