Stamford University Bangladesh

Sample Question for
Admission Written Test

(For Bachelor of Architecture (B. Arch.), Bachelor of Science in Civil Engineering, Bachelor of Science in Computer Science & Engineering and Bachelor of Science in Electrical & Electronic Engineering programs)

Time: 90 minutes *Full Marks: 70*

Name of Program: _____

Name of Candidate: _____

Admission Test Roll No: _____

Date: _____

_____
Invigilator's Signature

Marks Obtained:	
Section A:	**Section B:**
Total Marks (Section: A+B+C+D)	**Section C:**
	Section D:
_____ *Answer Script Checked By*	_____ *Answer Script Checked By*

Section - A (English)

Time: 25 minutes

PART I: PARAGRAPH

Question 1

Marks: = 10

Write a paragraph on the following topic (Limit 120 words).

Environment Pollution: the Major Causes

PART II: GRAMMAR

Questions 2-11 **Marks: 10 × 1 = 10**

Tick (√) on the correct answer.

2. I'll be ready to leave ____ about twenty minutes.

a. in b. for
c. about d. at

3. The child responded to his mother's demands ____ throwing a tantrum.

a. with b. by
c. from d. for

4. My fingers were injured so my sister had to write the note _____ me.

a. with b. to
c. for d. in

5. ____ is used to indicate possession.

a. A quotation b. An apostrophe
c. A comma d. A hyphen

6. ____ is used at the end of a sentence or remark to express strong emotion.

a. An exclamation mark b. A question mark
c. A quotation mark d. An apostrophe

7. The princess ___ down and slept for twenty years.

a. lain b. lay
c. lai d. lied

8. They love English weather, ____?

a. aren't they b. isn't they
c. don't they d. are they

9. Coal is still ____ in Britain.

a. manufactured b. grown
c. built d. mined

10. I can sell you some bananas but only ___.

a. a few b. little
c. few d. a little

11. Are you shopping for ___ health club to join so you can get in shape?

a. a b. an
c. the d. no article

SECTION – B (Mathematics)

Questions 1-20 **Marks: $20 \times 1 = 20$**

Tick (√) the correct answer:

1. **Evaluate $\int \frac{dx}{x^2+16}$.**

   a. $\frac{1}{4}\tan^{-1}\frac{x}{4}+c$ b. $\frac{1}{4}\tan^{-1}x+c$

   c. $\frac{1}{4}\sin^{-1}\frac{x}{4}+c$ d. $\tan^{-1}\frac{x}{4}+c$

2. **What is the area bounded by the points $(3,2)$, $(2,-1)$ and $(3,1)$?**

   a. $\frac{5}{2}$ sq. unit b. $\frac{3}{2}$ sq. unit

   c. $\frac{1}{2}$ sq. unit d. $\frac{7}{2}$ sq. unit

3. **What is the value of $sin^{-1}x + cos^{-1}x$ =?**

   a. 0 b. π

   c. $\frac{\pi}{2}$ d. 1

4. **What is the value of $(1+\omega+\omega^2)^3$ =?**

   a. 1 b. -1

   c. ω^2 d. 0

5. **What is the angle between vectors $-2\hat{\imath}+\hat{\jmath}+\hat{k}$ and $2\hat{\imath}+2\hat{\jmath}+3\hat{k}$?**

   a. $\cos^{-1}\left(\frac{1}{\sqrt{102}}\right)$ b. $\cos^{-1}\left(\frac{1}{102}\right)$

   c. $\cos^{-1}\left(\frac{1}{\sqrt{70}}\right)$ d. $\cos^{-1}\left(\frac{1}{70}\right)$

6. **Evaluate $\frac{d}{dx}(sin^{-1}3x)$.**

   a. $\frac{3}{\sqrt{2-9x^2}}$ b. $\frac{-3}{\sqrt{1-9x^2}}$

   c. $\frac{3}{\sqrt{1-9x^2}}$ d. None of these

7. **Find the value of $\lim_{x\to 0}\frac{2x+3}{x^2+1}$**

   a. 0 b. 3

   c. $\frac{1}{4}$ d. ∞

8. **The equation $(x+2)^2 = 16\,(y+1)$ represents:**

a. Circle
b. Ellipse
c. Hyperbola
d. Parabola

9. **What is the perpendicular line of the straight line $x + 3y + 10 = 0$?**

a. $3x - y + 10 = 0$
b. $3x - 2y + 7 = 0$
c. $x - 3y + 10 = 0$
d. None of these

10. **Find the value of i^{42}.**

a. i
b. 1
c. -i
d. -1

11. **What is the necessary condition to find the maximum and minimum value of $y = 6 + cos\ 3x$?**

a. $\frac{dy}{dx} > 0$
b. $\frac{dy}{dx} = 0$
c. $\frac{dy}{dx} < 0$
d. $\frac{d^2x}{dy^2} = 0$

12. **If $y = e^{2x}$ then what is the value of $\frac{dy}{dx}$ =?.**

a. e^{2x}
b. $a^{2x}\ ln(a+1)$
c. $a^x(ln\ x + 2)$
d. $2e^{2x}$

13. **If $A(2,\ 3, -4)$ and $B(3,\ -2, 1)$ are two points, find $\left|\overrightarrow{AB}\right|$.**

a. $\sqrt{51}$
b. 51
c. $\sqrt{21}$
d. 21

14. **Evaluate the integral $\int e^x\{sin\ x + cos\ x\}$.**

a. $e^x\ cos\ x + c$
b. $e^x\ sin\ x + c$
c. $e^x + c$
d. $e^x + c$

15. **Evaluate the integral $\int \frac{4\ sin\ x\ cos\ x}{sin^2 x}\,dx$**

a. 2 ln $(\cos^2 x)$
b. $2\ln(\sin^2 x)$
c. 2sin x
d. 2 ln (sin x)

16. **Find the value of$m$ for which the vectors $\overline{A} = \hat{\imath} - 2\hat{\jmath} + 3\hat{k}$ and $\overline{B} = 2\hat{\imath} + m\hat{\jmath} + 2\hat{k}$ are perpendicular?**

a. 2
b. -2
c. 4
d. -6

17. Which is the eccentricity of the conic $\frac{x^2}{16} - \frac{y^2}{9} = 1$?

a. $\sqrt{\frac{5}{4}}$

b. $\sqrt{\frac{5}{9}}$

c. $\frac{5}{4}$

d. $\frac{5}{9}$

18. Evaluate the integral $\int_0^2 2x\,dx$.

a. 0

b. -2

c. 4

d. -4

19. The equation $\frac{x^2}{16} - \frac{y^2}{4} = 1$ represents :

a. Circle

b. Hyperbola

c. Parabola

d. Ellipse

20. What is the slope of the straight line $2x - 3y + 10 = 0$?

a. $\frac{3}{2}$

b. $\frac{2}{3}$

c. $-\frac{2}{3}$

d. $-\frac{1}{2}$

SECTION- C (Physics)

Questions 1-20 **Marks: $20 \times 1 = 20$**

Tick (√) the correct answer:

1. **Which two quantities have same unit and dimension?**
   a. Energy and work
   b. Mass and weight
   c. Acceleration and velocity
   d. Force and pressure

2. **1 Calorie is equal to how much Jules?**
   a. 0.24 J
   b. 4.184 J
   c. 4.02 J
   d. 1J

3. **Electromagnetic theory of light was discovered by __**
   a. Maxwell
   b. Newton
   c. Huygens
   d. Hertz

4. **Frequency of a photon is 4.27×10^{14} Hz. What is the energy of the photon?**
   a. 1.77 eV
   b. 1.2 MeV
   c. 1.5 J
   d. 2.85 eV

5. **The work done by centripetal force is-**
   a. Infinity
   b. Positive
   c. Negative
   d. Zero

6. **A bullet of mass 0.01 kg comes out at a speed of 300 ms^{-1} from a gun of mass 6 kg. Find the backward velocity of the gun.**
   a. 25 ms^{-1}
   b. 5 ms^{-1}
   c. 0.5 ms^{-1}
   d. 1 ms^{-1}

7. **What is the escape velocity on the earth?**
   a. 11.2 km/ s
   b. 11.2 m/s
   c. 11.2 cm/s
   d. 11.2 mm/s

8. **For a radioactive substance which one of the following is correct?**
   a. $T_{1/2} = \frac{0.707}{\lambda}$
   b. $T_{1/2} = \frac{0.693}{\lambda}$
   c. $T_{1/2} = \frac{1}{\lambda}$
   d. $T_{1/2} = \frac{ln10}{\lambda}$

9. **$\vec{C} = \vec{A} \times \vec{B}$. The direction of $\vec{C}$ is**
   a. Parallel to $\vec{A}$
   b. Perpendicular to $\vec{A}$
   c. Perpendicular to both $\vec{A}$ and $\vec{B}$
   d. Parallel to both $\vec{A}$ and $\vec{B}$

10. Electric potential is actually one kind of –

a. Power
b. Work
c. Displacement
d. Force

11. Which one of the following is a pure semiconductor?

a. Calcium
b. Arsenide
c. Germanium
d. Aluminum

12. The mass of beta particle is –

a. 9.1095×10^{-31} Kg
b. 6.27×10^{-34} Kg
c. 1.67×10^{-27} Kg
d. 1.675×10^{-31} Kg

13. The charge of a photon is

a. 1.6×10^{-19} C
b. 1.6×10^{-18} C
c. 1.6×10^{-31} C
d. Zero

14. In vacuum speed of light is same and constant to all observers. This is the __ postulate of special theory of relativity.

a. second
b. first
c. third
d. none

15. The electrical energy is converted into mechanical energy by __

a. generator
b. motor
c. transformer
d. transistor

16. One light year is equal to –

a. 9.46×10^{12} Km
d. 2.45×10^{12} Km
c. 6.46×10^{12} Km
d. 5.8×10^{12} Km

17. What is the path difference between two points on light wave corresponding to the phase differenceof $2\pi/5$?

a. $\lambda/2$
b. $\lambda/3$
c. $\lambda/4$
d. $\lambda/5$

18. What is the time period of a second pendulum?

a. 1second
b. 2 seconds
c. 1 minute
d. 2 minutes

19. The least distance of distinct vision is

a. 25 cm
b. 10 inch
c. 0.25 mm
(d) all

20. Half-life of a radioactive substance is 5 years. How much of that material will remain undecayed after 15 years?

a. 75%
b. 50%
c. 25%
d. 12.5%

SECTION – D (Chemistry)

Questions 1-10 **Marks: 10 × 1 = 10**

Tick (√) on the correct answer.

1. The nucleus of the atom consists of –

a. Protons and neutrons
b. Protons and electrons
c. Neutrons and electrons
d. Protons, neutrons and electrons

2. Oxidation is a chemical reaction involving the –

a. Gain of neutron
b. Loss of neutron
c. Loss of electron
d. None

3. Which of the following is a homogeneous mixture?

a. Mixture of soil and water
b. Sugar solution
c. Mixture of sugar, salt and sand
d. Iodized table salt

4. Chemical formula of benzene-

a. C_6H_6
b. H_20
c. N_2
d. None

5. Which gas is responsible for the unpleasant smell of rotten eggs?

a. Sulfur dioxide
b. Hydrogen
c. Oxygen
d. None

6. Which of the following is a noble gas?

a. Nitrogen
b. Hydrogen
c. Helium
d. Chlorine

7. Which atomic particle has positive charge?

a. Proton
b. Neutron
c. Photon
d. Electron

8. Which gas is commonly known as laughing gas?

a. Nitrogen
b. Oxygen
c. Nitrous oxide
d. Carbon dioxide

9. What is the pH of a neutral solution?

a. 7
b. 14
c. 0
d. 1

10. Which of the following is an acid?

a. Water
b. HCl
c. Both
d. None

==========GOOD LUCK==========