

# Stamford University Bangladesh

## Admission Test

(For Science and Engineering related programs)



Time: 90 minutes

Full Marks: 70

Name of Program: \_\_\_\_\_

Name of Candidate: \_\_\_\_\_

Roll No: \_\_\_\_\_ Direct Admission: ☐ Yes ☐ No

Date: \_\_\_\_\_

\_\_\_\_\_  
Invigilator's Signature

### INSTRUCTIONS TO CANDIDATES:

- Write your name, roll number in the spaces at the top of this page.
- Answer all questions.
- Write your answers in pen on the sheet.
- At the end of the examination, hand in the question paper to the invigilator.

### Marks Obtained:

Section A:

Section B:

Section C:

Total:

**Note:** Students who have already been admitted will answer only (SECTION - A) English Section.

## SECTION-A

### PART I: WRITING

#### **Question 1**

**10**

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

**“Ekushe Book Fair”**

*(Please start writing from below this line, and can use the back of this page if necessary.)*

**PART II: GRAMMAR**

**Questions 2-11**

**10**

**Read each of the following sentences and choose the word or phrase (A, B, C or D) which you think is correct.**

**2. Every pair of sunglasses she tried on \_\_\_\_\_ too dark.**

- a. were                      b. was                      c. have                      d. has

**3. Mathematics \_\_\_\_\_ an area most store managers have experience with.**

- a. Is                      b. are                      c. has                      d. have

**4. The rhythm of the pounding wave's \_\_\_\_\_ calming.**

- a. is                      b. are                      c. have                      d. has

**5. He will leave \_\_\_\_\_ the morning of the third.**

- a. in                      b. at                      c. on                      d. for

**6. Mr. Green \_\_\_\_\_ at the University since 1989.**

- a. has been teaching                      b. has been taught  
c. was teaching                      d. teaches

**7. The store is closed \_\_\_\_\_ Saturday and Sunday.**

- a. On                      b. between                      c. in                      d. at

**8. There will be a concert \_\_\_\_\_ the evening.**

- a. At                      b. in                      c. with                      d. to

**9. Everybody \_\_\_\_\_ by the terrible news yesterday.**

- a. are shocked                      b. was shocked  
c. were shocked                      d. was shocking

**10. There \_\_\_\_\_ nine people on the team.**

- a. are                      b. is                      c. am                      d. has

**11. The school library is open from nine \_\_\_\_\_ four.**

- a. On                      b. for                      c. until                      d. by

Read the following passage and tick (✓) the best answer.

The food we eat seems to have profound effects on our health. Although science has made enormous steps in making food more fit to eat, it has, at the same time, made many foods unfit to eat. Some research has shown that perhaps 80% of all human illnesses are related to diet and 40% of cancer is related to the diet as well, especially cancer of the colon. People of different cultures are more prone to contract certain illnesses because of the characteristic foods they consume. That food is related to illness is not a new discovery. In 1945, government researchers realized that nitrates and nitrites (commonly used to preserve color in meats) as well as other food additives caused cancer. Yet, these carcinogenic additives remain in our food, and it becomes more difficult all the time to know which ingredients on the packaging labels of processed food are helpful or harmful.

The additives that we eat are not all so direct. Farmers often give penicillin to cattle and poultry, and because of this, penicillin has been found in the milk of treated cows. Sometimes similar drugs are administered to animals not for medical purposes, but for financial reasons. The farmers are simply trying to fatten the animals in order to obtain a higher price on the market. Although the Food and Drug Administration (FDA) has tried repeatedly to control these procedures, the practices continue.

\_\_\_\_\_ A healthy diet is directly related to good health. Often we are unaware of detrimental substances we ingest. Sometimes well-meaning farmers or others who do not realize the consequences add these substances to food without our knowledge.

**12. How has science done a disservice to people?**

- a. Because of science, disease caused by contaminated food has been virtually eradicated.
- b. It has caused a lack of information concerning the value of food.
- c. As a result of scientific intervention, some potentially harmful substances have been added to our food.
- d. The scientists have preserved the color of meats, but not of vegetables.

**13. The word “prone” in line 5 is nearest in meaning to-**

- a. supine
- b. unlikely
- c. harmful
- d. predisposed

**14. What are nitrates used for?**

- a. They preserve flavor in packaged foods.
- b. They preserve the color of the meat.
- c. They are the object of research.
- d. They cause the animals to become fatter.

**15. FDA means-**

- a. Food Direct Additives
- b. Final Difficult Analysis
- c. Federal Dairy Additives
- d. Food and Drug Administration

**16. The word “these” in the line 8 refers to-**

- a. meats                      b. colors                      c. researchers                      d. nitrates and nitrites

**17. In line 8, the word “carcinogenic” is closest in meaning to-**

- a. trouble-making                      b. color-retaining  
c. money-making                      d. cancer-causing

**18. All of the following statements are true EXCEPT-**

- a. drugs are always given to animals for medical reasons.  
b. some of the additives in our food are added to the food itself and some are given to the living animals.  
c. researchers have known about the potential hazards of food additives for more than 45 years.  
d. food may cause 40% of cancer in the world.

**19. The word “additives” in line 7 is closest in meaning to-**

- a. added substances                      b. natural substances  
c. dangerous substances                      d. benign substances

**20. What is the best title for this passage?**

- a. Harmful and Harmless Substances in Food                      b. Improving Health through a Natural Diet  
c. The Food You Eat Can Affect Your Health                      d. Avoiding Injurious Substances in Food

**21. In line 2, the word “fit” is closest in meaning to-**

- a. athletic                      b. suitable                      c. tasty                      d. adaptable

## SECTION-B

(Mathematics or Biology)

**Part-I: Mathematics**

**Marks: 20 X 1=20**

**(For candidates of Engineering and related Programs)**

**Tick (✓) the correct answer:**

1. Domain of the function  $f(x) = x^2 - 3$ , is

- (a)  $(-\infty, +\infty)$  (b)  $[-\infty, +3]$  (c)  $[0, +\infty)$  (d)  $(-\infty, -3)$

2. If  $y = t \cos t$  then  $\frac{dy}{dt} = ?$

- (a)  $\cos t - t \sin t$  (b)  $\cos t + t \sin t$  (c)  $t + \cos t$  (d) None of these

3. Find the modulus of the complex number  $\sqrt{5} + \sqrt{3}i$

- (a)  $\sqrt{2}$  (b)  $\sqrt{8}$  (c)  $\sqrt{34}$  (d) 8

4. Find  $\lim_{x \rightarrow 0} \frac{2\cos x - 1}{2}$

- (a) 1 (b) 0 (c)  $\frac{1}{2}$  (d) None of these

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

- (a)  $(\log x + 1)$  (b)  $x^x(\log x + 1)$  (c)  $x(\log x + 1)$  (d)  $x^x(x + 1)$

6. If  $f(x) = \frac{3x+4}{x-5}$  then find  $f^{-1}(x)$

- (a)  $\frac{5x+4}{x-3}$  (b)  $\frac{3x-4}{x+5}$  (c)  $\frac{4x-3}{5-x}$  (d) None of these

7. If  $y = x^2 \log x$  then  $y_4 = ?$

- (a)  $\frac{2}{x} + 3$  (b)  $2 \log x + 3$  (c)  $\frac{2}{x}$  (d) 2

8. The centre of the circle  $x^2 + y^2 - 2x - \sqrt{3}y - 75 = 0$  is

- (a)  $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$  (b)  $\left(-\frac{1}{2}, -\frac{3}{2}\right)$  (c)  $(2, \sqrt{3})$  (d)  $\left(1, \frac{\sqrt{3}}{2}\right)$

9. If  $\sin \alpha$  and  $\cos \alpha$  be the roots of the equation  $25x^2 + 5x - 12 = 0$  then the value of  $\sin 2\alpha$  is

- (a)  $\frac{12}{25}$  (b)  $-\frac{12}{25}$  (c)  $-\frac{24}{25}$  (d)  $\frac{4}{5}$

10. Which one is the linear equation?

- (a)  $x^2 + y^2 - 1 = 0$  (c)  $3x + 2y + 5 = 0$   
(b)  $x - 3y^2 + 2 = 0$  (d)  $x^2 - y^2 - 2 = 0$

11. The equation  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  represents

- (a) ellipse (b) parabola (c) circle (d) hyperbola

12. Find the unit vector of the vector  $2\hat{i} - 2\hat{j} + \hat{k}$ .

- (a)  $\frac{2\hat{i}-2\hat{j}+\hat{k}}{-1}$  (b)  $\frac{2\hat{i}-2\hat{j}+\hat{k}}{3}$  (c)  $\frac{2\hat{i}-2\hat{j}+\hat{k}}{-3}$  (d)  $\frac{2\hat{i}-2\hat{j}+\hat{k}}{-\sqrt{3}}$

13. Find the distance of the straight line  $3x + 2y - 2 = 0$  from the point  $(4, -3)$ .

- (a)  $\frac{1}{13}$  (b)  $\frac{4}{13}$  (c)  $\frac{1}{\sqrt{13}}$  (d)  $\frac{4}{\sqrt{13}}$

14. What is the value of  $(\omega + \omega^2)^2 = ?$

- (a) 0 (b) 1 (c) -1 (d) -2

15. If  $I$  is the identity matrix of order  $3 \times 3$ ,  $I^5 = ?$

- (a)  $I$  (b) 0 (c) 5 (d)  $-I$

16. Which one is the function of  $f(xy)$

- (a)  $xy + 2$  (b)  $xy^2 - 2$  (c)  $x + y$  (d)  $x - xy$

17. What are the critical points of the function  $f(x) = 2x^3 - 3x$

- (a)  $\frac{3}{6}$  (b)  $\pm \frac{1}{2}$  (c)  $\pm \frac{1}{\sqrt{2}}$  (d)  $\frac{1}{\sqrt{2}}$

18. Find  $\int \log x \, dx$

- (a)  $\frac{1}{x} + c$  (b)  $x \log x + c$  (c)  $x \log x - x + c$  (d)  $x + c$

19. What is the value of  $\tan^{-1} a + \tan^{-1} b = ?$

- (a)  $a + b$  (b)  $\frac{a-b}{1+ab}$  (c)  $\frac{a+b}{1-ab}$  (d) None of these

20.  $\int \sec^2 x \, dx = ?$

- (a)  $\sec x \tan x$ . (b)  $\tan x$  (c)  $\operatorname{cosec}^2 x$  (d) None of these

**Part-II: Biology**

Marks: 20 X 1=20

**(For Candidates of Pharmacy and Microbiology Programs)****Tick (✓) the correct answer in the following questions or statement:****1. Nephron is the structural unit of**

- (a) Kidney                      (b) Heart                      (c) Brain                      (d) Pancreas

**2. Which is growth hormone?**

- (a) Insulin                      (b) ADH                      (c) Somatotropin                      (d) Gonadotropin

**3. P<sup>H</sup> of blood is**

- (a) 7.30 - 7.40                      (b) 8.40 – 9.40                      (c) 2.0 – 3.0                      (d) 4.0 – 5.0

**4. White blood cells are called**

- (a) Ribocytes                      (b) Thrombocytes                      (c) Mycocytes                      (d) Leucocytes

**5. Microscope was discovered by**

- (a) Robert Koch                      (b) Alexander Fleming  
(c) Anton van Leeuwenhoek                      (d) Robert Hook

**6. E. coli is a**

- (a) Bacterium                      (b) Virus                      (c) Fungus                      (d) Algae

**7. Which is Amino acid?**

- (a) Carbonic acid                      (b) Sulfuric acid                      (c) Valine                      (d) Acetic acid

**8. Platelets are the component of**

- (a) Blood                      (b) Hormone                      (c) Nerves                      (d) Bone

**9. Vitamin C is soluble in**

- (a) Water                      (b) Ethyl acetate                      (c) Carbon dioxide                      (d) Propane

**10. Enzyme by chemical nature is**

- (a) Fat                      (b) Protein                      (c) Carbohydrate                      (d) Acid

**11. Plants obtain carbohydrate by**



- (a) Photosynthesis
- (c) Phagosynthesis

- (b) Chemisynthesis
- (d) Amisynthesis

**12. Blood is a**

- (a) Connective tissue
- (c) Fibrous tissue

- (b) Adipose tissue
- (d) Nervous tissue

**13. Which one is a non-cellular?**

- (a) Bacterium
- (b) Virus
- (c) Protozoa
- (d) fungus

**14. Normal blood pressure of human is**

- (a) 130/100
- (b) 120/80
- (c) 140/40
- (d) 150/60

**15. Chemically Antigen is**

- (a) Fat
- (b) Amino acid
- (c) Protein
- (d) Carbohydrate

**16. Red blood cells (RBC) are called**

- (a) Ribocytes
- (b) Thrombocytes
- (c) Phagocytes
- (d) Erythrocytes

**17. Esophagus is a part of**

- (a) Digestive system
- (b) Excretory system
- (c) Nervous system
- (d) Reproductive system

**18. Insulin is secreted by**

- (a) Stomach
- (b) Pancreas
- (c) Portal cell
- (d) Brain cell

**19. Site of protein synthesis**

- (a) Centrosome
- (b) Ribosome
- (c) Mesosome
- (d) Microsome

**20. The scientific name of human is**

- (a) Homo sapiens
- (b) Hetero sapiens
- (c) Mono sapiens
- (d) Ami sapiens

## SECTION-C

(Physics or Chemistry)

### Part-I: Physics

Marks: 20 x 1=20

**(For candidates of Engineering and related Programs)**

**Tick (✓) the correct answer:**

1. Which two quantities have same unit and dimension?

- (a) Energy and work (b) Mass and weight  
(b) Acceleration and velocity (d) Force and pressure

2. 1 Calorie is equal to how much Jules?

- (a) 0.24 J (b) 4.2 J (c) 4.0 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  $4.27 \times 10^{14}$  Hz. What is the energy of the photon?

- (a) 1.77eV (b) 1.2 MeV (c) 1.5 J (d) 2.85 eV

5. Which one is not a magnetic substance?

- (a) Steel (b) Iron (c) Cobalt (d) Nickel

6. A bullet of mass 0.01 kg comes out at a speed of 300 m/sec from a gun of mass 6 kg. Find the backward velocity of the gun.

- (a) 25 m/sec (b) 5 m/sec (c) 0.5 m/sec (d) 1 m/sec

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)  $T_{1/2} = \frac{\ln 10}{\lambda}$

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. Who discovered the general theory of relativity?

- (a) Newton                      (b) Lorentz                      (c) Einstein                      (d) Galileo

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

- (a) Calcium                      (b) Arsenide                      (c) Germanium                      (d) Aluminum

**12. The mass of beta particle is . .**

- (a)  $9.1095 \times 10^{-31}$  Kg                      (b)  $6.27 \times 10^{-34}$  Kg  
(c)  $1.67 \times 10^{-27}$  Kg                      (d)  $1.675 \times 10^{-31}$  Kg

**13. The charge of a photon is**

- (a)  $1.6 \times 10^{-19}$  C                      (b)  $1.6 \times 10^{-18}$  C                      (c)  $1.6 \times 10^{-31}$  C                      (d) Zero

**14. In vacuum speed of light is  $c$  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)  $9.46 \times 10^{12}$  Km                      (b)  $2.45 \times 10^{12}$  Km  
(b) (c)  $6.46 \times 10^{12}$  Km                      (d)  $5.8 \times 10^{12}$  Km

**17. If the phase difference between two points of light is  $2\pi/5$ , what is the path difference?**

- (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

**19. Atomic bomb has been produced based on the \_\_ process.**

- (a) fission                      (b) fusion                      (c) Compton effect                      (d) all

**Part-II: Chemistry**  
**(For candidates of Engineering and related Programs)**

Marks: 20 x 1=20

**Tick (✓) the correct answer:**

**1. The strongest acid among the following is**

- (a) HCl                      (b) H<sub>2</sub>SO<sub>4</sub>                      (c) HNO<sub>3</sub>                      (d) CH<sub>3</sub>COOH

**2. Which one is common salt?**

- (a) KCl                      (b) MgCl                      (c) NaCl                      (d) K<sub>2</sub>SO<sub>4</sub>

**3. The molecular weight of CO<sub>2</sub> is**

- (a) 44                      (b) 42                      (c) 46                      (d) 48

**4. Acetic acid is an**

- (a) Aliphatic acid                      (b) Aromatic acid  
(c) Aliphatic and Aromatic acid                      (d) None of a, b, c

**5. Which one is used in inert gas?**

- (a) Nitrogen                      (b) Hydrogen                      (c) Oxygen                      (d) Argon

**6. Which one is not sugar?**

- (a) Benzene                      (b) Glucose                      (c) Sucrose                      (d) Rhamnose

**7. Which one is Blue Vitriol?**

- (a) CuSO<sub>4</sub>.5H<sub>2</sub>O                      (b) ZnSO<sub>4</sub>.2H<sub>2</sub>O  
(c) FeSO<sub>4</sub>.3H<sub>2</sub>O                      (d) MgSO<sub>4</sub>.4H<sub>2</sub>O

**8. Valency of Oxygen is**

- (a) 1                      (b) 2                      (c) 3                      (d) 4

**9. Which one is non-reducing sugar?**

- (a) Sucrose                      (b) Glucose                      (c) Galactose                      (d) Fructose

**10. The molecular weight of Glucose is-**

- (a) 380                      (b) 280                      (c) 180                      (d) 480

**11. Which one is base?**

- (a) NaOH                      (b) KCl                      (c)  $\text{MgCl}_2$                       (d)  $\text{NaNO}_3$

**12. CaO is a**

- (a) Acid oxide                      (b) Basic oxide                      (c) Neutral oxide                      (d) Dioxide

**13. Atomic weight of Carbon is**

- (a) 18                      (b) 14                      (c) 16                      (d) 12

**14. The melting point of ice is**

- (a)  $0^\circ\text{C}$                       (b)  $2^\circ\text{C}$                       (c)  $4^\circ\text{C}$                       (d)  $6^\circ\text{C}$

**15. Atomic number of hydrogen is**

- (a) 3                      (b) 2                      (c) 1                      (d) 4

**16.  $\text{N}_2\text{O}$  is-**

- (a) Nitrous oxide                      (b) Nitric oxide  
(c) Nitrogen dioxide                      (d) Nitrogen oxide

**17. Chief chemical element of Atomic bomb is**

- (a) Iridium                      (b) Uranium                      (c) Zirconium                      (d) Rhodium

**18. The symbol of Gold is**

- (a) Aw                      (b) Ag                      (c) Au                      (d) Av

**19. Which one is pentavalent?**

- (a) Nitrogen                      (b) Hydrogen                      (c) Sulfur                      (d) Silver

**20. Which one may act as both acid and base?**

- (a) Carbon monoxide                      (b) Hydrogen sulfide  
(c) Ferrous oxide                      (d) Water

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

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