

Department of Computer Science & Engineering
University of Asia Pacific (UAP)

BSc in Computer Science and Engineering
Undergraduate Admission Test - Spring 2023 [Sample Question]
Full Marks: 50 **Duration: 1 Hour**

Application ID:	
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Instructions:

- You have to answer both MCQ and written questions in 1 Hour.
- Each MCQ question carries a mark of 1. Marks for the written questions are shown in the margins.
- Fill in/write the correct answer with a ballpoint pen.
- There is no negative marking for incorrect answers.

Physics - 10

- 01 Which product will determine the amount of work done by force?
(A) Cross Product (B) Dot Product
(C) Vector Product (D) Geometric Product
- 02 The maximum altitude gained by a projectile thrown with velocity v and at angle θ is
(A) $2v\sin\theta/g$ (B) $v^2\sin 2\theta/g$
(C) $v^2\sin^2\theta/2g$ (D) $v^2\sin\theta/2g$
- 03 1000 kg of water is raised to a height of 100m and 10m by two water pipes. What is the total work done by the water pipes together?
(A) 980 KJ (B) 1078 KJ
(C) 98 KJ (D) 996 KJ
- 04 If an object of 2 kg is fall from a height of 12 m, how long does it takes to reach the ground?
(A) 2.24 seconds (B) 1.76 seconds
(C) 2.04 seconds (D) 1.56 seconds
- 05 Poise is the unit of which of the following?
(A) Poisson's Ratio (B) Compressibility
(C) Young's Modulus (D) Modulus of Rigidity
- 06 The wave intensity is proportional to -
(A) Amplitude (B) Time period
(C) Frequency (D) Resonance
- 07 At which temperature and pressure, ice, water, and steam can stay together?
(A) 0°C , 4.58 mm Hg (B) 273K, 4.58 mm Hg
(C) 0°C , 4.85 mm Hg (D) 273K, 4.85 mm Hg
- 08 What is the Unit of current density?
(A) Am^{-1} (B) Am^{-2}
(C) Am (D) Am^{-3}
- 09 What is the reason for different colors in the light?
(A) Wavelength difference (B) Different source
(C) Intensity (D) Amplitude difference
- 10 In which process the sun produces energy?
(A) Nuclear Fission (B) Nuclear Reactor
(C) Nuclear Fusion (D) Chemical Process

Mathematics - 15

- 01 What is the trace of an I_3 matrix?
 (A) 1 (B) 2
 (C) 3 (D) 4
- 02 What is the distance of the line $2x+3y-5=0$ from point $(1,2)$?
 (A) $\frac{3}{\sqrt{13}}$ (B) $\frac{7}{\sqrt{13}}$
 (C) $\frac{\sqrt{13}}{9}$ (D) $\frac{\sqrt{13}}{11}$
 (E) $\frac{\sqrt{13}}{\sqrt{13}}$
- 03 There are 5 roads connecting Dhaka and Bandarban. 3 roads connect Bandarban and Cox's Bazar. One can reach Cox's Bazar directly from Dhaka using 5 different ways. How many ways can you reach Cox's Bazar directly or indirectly from Dhaka?
 (A) 15 (B) 75
 (C) 20 (D) 28
- 04 Consider a circle with a center at O and a radius of r. A is a point that is outside of the circle. What is the relation between OA and r?
 (A) $OA = r$ (B) $OA < r$
 (C) $OA > r$ (D) None
- 05 What is the range of the function $f(x) = \sqrt{x^2 - 4}$?
 (A) R (B) $-2 < x < 2$
 (C) $x > 2$ or $x < -2$ (D) R_+
- 06 $\lim_{x \rightarrow 2} \frac{\sin(x-2)}{x-2} = ?$
 (A) 2 (B) 3
 (C) 1 (D) 4
- 07 $\iint \sin 2x$
 (A) $\frac{1}{2} \sin 2x + c$ (B) $-\frac{1}{2} \sin 2x + c$
 (C) $\frac{1}{4} \sin 2x + c$ (D) $-\frac{1}{4} \sin 2x + c$
- 08 Two forces of the 3p and 2p amplitude have the sum of R. If the first one is doubled, then R is doubled. What is the angle (in degrees) between the two forces?
 (A) 60 (B) 120
 (C) 180 (D) 360
- 09 What is the slope of the straight line $y = -5x + 9$?
 (A) -5 (B) $\frac{1}{5}$
 (C) 5 (D) $-\frac{1}{5}$
- 10 $\cot(\sin^{-1}(\frac{1}{2})) = ?$
 (A) $\frac{1}{\sqrt{3}}$ (B) $\frac{2}{\sqrt{3}}$
 (C) $\sqrt{3}$ (D) $2\sqrt{3}$
- 11 In how many ways can we organize the letters in the word 'GEOMETRY' in such a way that 'E' remains at the start?
 (A) 306 (B) 20160
 (C) 720 (D) 30
- 12 If $a = \sin x, b = \cos x$, then $\frac{da}{db} = ?$
 (A) $\tan x$ (B) $-\tan x$
 (C) $\cot x$ (D) $-\cot x$
- 13 $\left| \frac{1+i}{1-i} \right| = ?$

- (A) 0 (B) 1
 (C) -1 (D) 2
- 14 What is the eccentricity of the ellipse $25x^2 + 16y^2 = 400$?
 (A) $\frac{3}{4}$ (B) $\frac{4}{5}$
 (C) $\frac{4}{3}$ (D) $\frac{5}{3}$
 (E) $\frac{3}{5}$
- 15 What condition applies to the conic $ax^2 + by^2 + 2gx + 2fy + 2hxy + c = 0$ if it has to be a parabola?
 (A) $h^2 = ab$ (B) $h^2 > ab$
 (C) $h^2 < ab$ (D) $h^2 = gab$

ICT - 10

- 01 What types of images are used in virtual reality?
 (A) One Dimensional (B) Two Dimensional
 (C) Three Dimensional (D) Four Dimensional
- 02 Which of the following is not an application of artificial intelligence?
 (A) Computer Vision (B) Machine learning
 (C) Database Management System (D) Deep Learning
- 03 Which device can perform data filtering?
 (A) Hub (B) Switch
 (C) Repeater (D) Router
- 04 Unicode has-
 (A) 4 bits (B) 16 bits
 (C) 8 bits (D) 32 bits
- 05 What is the 2's complement of the decimal number -12?
 (A) 00001100 (B) 11111100
 (C) 11110011 (D) 11110100
- 06 What is the Hexadecimal form of binary number 111011?
 (A) E3 (B) E8
 (C) EC (D) CE
- 07 What is the correct HTML for creating a hyperlink?
 (A) `<a>https://uap-bd.edu/` (B) ` UAP `
 (C) ` UAP ` (D) ` UAP `
- 08 What is the output of the following code snippet?

```
int main() {
    int sum = 2 + 4 / 2 + 6 * 2;
    printf("%d", sum);
    return 0;
}
```

 (A) 10 (B) 16
 (C) 15 (D) 18
- 09 What is the built-in library function to compare two strings in C?
 (A) `string_cmp()` (B) `strcmp()`
 (C) `equals()` (D) `str_compare()`
- 10 Which of the following attributes can be taken as a primary key?
 (A) Name (B) Id
 (C) Department (D) Street

English - 15

- 01 Can you speak _____ Spanish?
 (A) a (B) an
 (C) the (D) No article
- 02 My contract has been extended _____ another year.
 (A) over (B) for
 (C) in (D) to

- 03 Tell me if you _____ any help.
- (A) need (B) will need
(C) needed (D) would need
- 04 This is the garage _____ they used to work.
- (A) where (B) which
(C) that (D) when
- 05 Each of us _____ the world differently.
- (A) will see (B) see
(C) sees (D) will not see

06 Translate the following Bangla paragraph into English.

05

"১৯৫২ সালের ২১শে ফেব্রুয়ারী বাংলাকে পূর্ব পাকিস্তানের অন্যতম রাষ্ট্রভাষা করার দাবিতে আন্দোলনরত ছাত্রদের ওপর পুলিশের গুলিবর্ষণে অনেক তরুণ শহীদ হন। তাদের মধ্যে অন্যতম হলো রফিক, জব্বার, শফিউর, সালাম, বরকত সহ অনেকেই। দিনটি শহীদ দিবস ও আন্তর্জাতিক মাতৃভাষা দিবস হিসাবে সুপরিচিত। ১৭ নভেম্বর ১৯৯৯ সালে জাতিসংঘ কর্তৃক গৃহীত সিদ্ধান্ত মোতাবেক প্রতিবছর একুশে ফেব্রুয়ারি বিশ্বব্যাপী আন্তর্জাতিক মাতৃভাষা দিবস পালন করা হয়।"

07 Write a Paragraph on "A Memorable Event in Your Life"

05