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ARBA MINCH UNIVERSITY
STREAM SELECTION QUALIFICATION EXAMINATION FOR YEAR I STUDENTS

Booklet Three: Technology Stream Examination

Code 3

Dear Students,

This Booklet contains 60 questions relating to General English, General Mathematics, General Physics and General Technology with 15 questions for each subject area. Please, make sure you have got all the 60 questions.

You are provided with separate answer sheets for each subject area. So, carefully detach the answer sheets from the question sheets and return only the answer sheets at the end.

Please, be aware that any attempt of cheating is strictly forbidden.

Value - 30%
Time given - 3 hrs

March, 2020

AMU

English for Technology, Exam Code 03

Instruction: Read the Passage carefully and answer the Questions that Follow

Fact Checking Website in Africa

Africa Check, a fledgling fact checking website, is attempting to pin down unfounded claims made by the country's leaders, media outlets along with widely held beliefs.

There is a common claim in Johannesburg that it has the largest man-made forest in the world. It's easy to believe; the city has **lush**, green canopy that covers many neighborhoods. But it's not true, according to Africa Check, which found that the largest man-made forest is actually in China, next to the Gobi desert.

Debunking bogus claims, politically charged fictions and unfounded statements, Africa Check is a website that challenges media, politicians and the occasional social media celebrity when they massage the truth, or ignore it completely, said Julian Rademeyer, southern Africa editor for the site.

"I think the fundamental element of our work is that we are trying to get people to question what they're told, what they read, what politicians say to them, and to look at what the information that is there and ask essentially what the fundamental question is 'Where is the evidence?' If someone makes a claim, where is the evidence to support that claim, and to actually interrogate those claims and not to accept things purely for what they are," Rademeyer said.

Africa Check was launched in June 2012 by the Agence France Press Foundation in partnership with the University of Witswaterand's Journalism Department. Rademeyer and a researcher are the site's two full-time employees. There is also a team of freelance reporters who work on fact checking assignments.

Following in the footsteps of popular American websites like PolitiFact and Factcheck.org, Africa Check is the first media outlet in South Africa to solely work in fact checking. South Africa has a strong legacy of investigative journalism and photography that dates back to the apartheid era. But like many countries, Rademeyer says its news industry has been **hampered** by shrinking budgets and newsrooms.

"Because of the fact that newspapers don't have the resources they would've had in the past, or don't have specialist beat reporters," he said. "It allows public figures and it allows politicians to make claims that don't go checked. I think that's where we play a role. We come in and look at those claims and we have the ability and the time to go through those claims."

Paula Fray, former editor for the Star Newspaper and a media consultant, says Africa Check may put a much-needed pressure on newsrooms.

"At the moment Africa Check is not known as much as I'm hoping as it going to be known," she said. "I'm hoping that eventually journalists will be writing their stories and thinking if my news editor doesn't pick up that something hasn't been verified, Africa Check might pick up that it hasn't been verified. So I'm not going to put anything in my stories unless I can prove it."

She also hopes it will create a greater culture of accountability. "I think the more organizations out there holding journalism to account the better actually for the industry," Fray said.

The site also takes on myths that get repeated so often that they go unchecked. When a South African musician with 175,000 Facebook followers made the claim that white South Africans are being killed at an alarming rate, Africa Check looked into the facts. It found that most of the musician's claims were exaggerated or untrue.

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The site has also debunked claims made about traditional healers, South Africa's rate of asylum seekers and a BBC report about white squatter camps in South Africa.

Long term, Rademeyer envisions the site expanding across the continent. "I really do think as a project it could play a very important role," he said. "We've done some very basic fact checking or fact sheet-related reporting on elements of the elections in Zimbabwe recently. We'd obviously like to do more of that in the next elections in Zimbabwe, for instance, and elections in neighboring countries. And try to expand our reach." With presidential elections looming next year in South Africa, Botswana, Mozambique and Namibia, the site will be busy.

Part I: Based on the reading passage above, say the following statements true or false

1. Politicians and social media celebrities may deliberately deceive the public
2. Africa check was founded by the University of Witswaterand's Journalism Department.
3. The largest man-made forest which is located near Gobi desert found in Johannesburg.
4. BBC's report about white squatter camps is incompatible with the websites.
5. Africa Check, PolitiFact and Factcheck.org, are the first media outlet in South Africa
6. Paula Fray and Julian Rademeyer own the websites, Africa Check.
7. Accountability is important according to Rademeyer explanation.
8. Apartheid has contributed a lot for the cotemporary South Africa's journalism.

Part II: Based on the above text, choose the correct answer from the alternatives given.

9. What are the stated aims of Africa Watch?
   A. to get people reading more
   B. to get people entertained
   C. to get people angry
   D. to get people to think
10. Which of these has hit South African journalism?
   A. Bribery
   B. money problems
   C. Personal Interests
   D. Corruption
11. According to the passage
   A. Africa Check is not news website
   B. newspapers in South African have resources these days
   C. the current time is positive for newspapers in South Africa
   D. Apartheid was good time for newspapers
12. According to Paula Fray,
   A. Editor loves Africa Check
   B. Africa Check ease newsroom task
   C. Journalists will care for their news hereafter
   D. Africa Check will not be known
13. What does the word "***Lush***" in paragraph *two*, line *two* mean?
   A. abundant
   B. gush
   C. rush
   D. about
14. What does the word "***debunking***" in paragraph *three*, line *one* mean?
   A. Reverting
   B. revealing
   C. banking
   D. keeping
15. What does the word "***hampered***" in paragraph *six*, line *four* mean?
   A. humped
   B. dumper
   C. elevated
   D. hindered

General Mathematics, Exam Code 03

Instruction: Choose the best answer and put the letter of your choice on the answer sheet

1. Which of the following is Not True about the function $f(x) = log_a^x, 0 < a < 1$?
   A. if $1 < x < y$, *then* $f(x) > f(y)$
   B. if $1 < y < x$, *then* $f(x) < f(y)$
   C. if $0 < x < y < 1$, *then* $f(x) > f(y)$
   D. for all $x > 0$ if $0 < a < b < 1$, *then* $log_a^x < log_b^x$.
2. If $f(x) = \boldsymbol{tanhx}$, then the inverse of f, $f^{-1}(x) =$ _____
   A. $ln\left(\frac{x+1}{x-1}\right), x > 1$ B. $-ln\left(\frac{x+1}{x-1}\right), x > 1$ C. $\frac{1}{2}ln\left(\frac{x+1}{x-1}\right), |x| > 1$ D. $\frac{1}{2}ln\left(\frac{x+1}{1-x}\right), |x| < 1$
3. For which of the following number systems the law of **Trichotomy** does not hold True?
   A. Integers B. Natural no. C. Complex no. D. Rational no.
4. Which of the following is always True?
   A. The product of any two irrational numbers is rational.
   B. The sum of any two rational numbers is rational.
   C. The sum of any two irrational numbers is rational.
   D. The product of any two irrational numbers is irrational.

5. One of the following is Not included under Conic sections?
   A. Circle B. parabola C. hyperbola D. Straight line
6. Let $f(x) = x^2 - 3x - 12$, $g(x) = \sqrt{x+5}$ and $h(x) = 4x - 2$, then $fohog(-1) =$ ____
   A. 6 B. 2 C. -3 D. -7
7. The area of a triangle formed by the vertex and the end points of the latus rectum of the parabola: $x^2 = 12y$ in square meters is:
   A. 12 B. 36 C. 18 D. 9
8. Which of the following is Not a valid argument?
   A. $p, q \mapsto p \wedge q$ B. $\neg p, pvq \mapsto q$ C. $\neg q, p \Rightarrow q \mapsto \neg p$ D. $p, pvq \mapsto q$
9. Which of the following is logical equivalent with the proposition
   P: **Either the number is Not prime or it is odd.**
   A. If the number is prime, then it is not odd.
   B. If the number is odd, then it is prime.
   C. If the number is not odd, then it is not prime.
   D. If the number is not prime, then it is odd.
10. Suppose your height is 1.75m. If the sun is 90^o above your head, what will be the length of your shadow on the ground in meters?
    A. 0 B. 2 C. 1 D. 1.75
11. Let the xy-plane is rotated by an angle $\theta = \frac{\pi}{4}$ in CCW direction, what will be the image of the point $P = (-\sqrt{2}, 3\sqrt{2})$ with respect to the new axis ?
    A. (2,4) B. $(-4,2)$ C. $(2,-4)$ D. (4,2)
12. Let $v_1 = 3i - 2j + k$ and $v_2 = 2i + k$, be vectors in space, then $\|2v_1 - 3v_2\| =$ ____
    A. 4 B. $\sqrt{17}$ C. 3 D. 17
13. Let $U =$ The set of integers,
    $P(x)$: x is a prime number,
    $Q(x)$: x is an even number and
    $R(x)$: x is an odd number,
    Then the truth value of $(\exists x)[P(x) \Rightarrow Q(x)] \Leftrightarrow (\forall x)[R(x) \wedge P(x)]$ is
    A. False B. True C. Not determined D. None
14. Which of the following is **Not True** about the Hyperbola : $y^2 - x^2 + 1 = 0$?
    A. It is horizontal hyperbola B. its center is at origin.
    C. its vertices are $(0, \pm 1)$ D. The asymptotes are lines $y = \pm x$
15. The LCM of the three natural numbers **16, 45** and **21** is
    A. 420 B. 5040 C. 1680 D. 720

General Physics, Exam Code 03

Instruction: Choose the best answer and put the letter of your choice on the answer sheet

1. Which of the following statement is wrong
   a. Electric filed foe a moving charge valid only for test charge
   b. Electric force for moving charge $F_e = \frac{K|q_1||q_2|}{r^2}$
   c. Magnetic force always perpendicular to both velocity of charge and magnetic field
   d. All the statements are correct

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2. If an object is in equilibrium, which of the following statement is not true
   a. The acceleration of the object must be constant
   b. The velocity of an object must be constant
   c. The object must be at rest
   d. a and b
3. Why sky appears blue? Because
   a. There is more blue color in sunlight than any other color
   b. Eye is more sensitive to blue
   c. Short wave length are scattered more than the long wave length by the atmosphere
   d. The atmospheric absorbs long wave length more than short length
4. A woman standing on the earth, in terms of magnitude what is the compression between her gravitational force on the earth and the earth gravitational force on her
   a. Grater
   b. Less
   c. Can't be determined without woman's and earth's mass
   d. Equal
5. If we use plus or minus sign to indicate the direction of velocity and acceleration. in which of the following situation the object speed up
   a. Positive velocity and negative acceleration
   b. negative velocity and positive acceleration
   c. negative velocity and negative acceleration
   d. positive velocity and zero acceleration
6. Which of the following is not a statement of Kirchhoff's law
   a. Resistance of the conductor is equal to the ratio of voltage and current in the conductor
   b. The algebraic sum of the current at junction in the circuit is zero
   c. In any closed circuit the algebraic sum of emf is zero
   d. The current going in the junction is equal to the current leaving the junction
7. using proper scientific notation how would u round of the number $9.9813x10^{-5}$ to two significance digit
   a. $10.x10^{-4}$
   b. $9.9x10^{-4}$
   c. $1x10^{-4}$
   d. $1.0x10^{-4}$
8. If three conservative and one non-conservative force acts with a system, how many potential energy terms appears in the equation that describe the system
   a. 3
   b. 6
   c. 4
   d. 7
9. Which one of the following is different from the other
   a. length
   b. speed
   c. temperature
   d. time
10. If an object is in equilibrium, which of the following statement is not true
    a. The velocity of an object must be constant
    b. The object must be at rest
    c. The acceleration of the object must be constant
    d. a and b

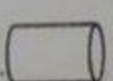
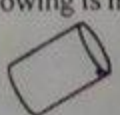
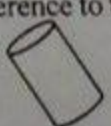
11. An objects of mass m_1 *and* m_2, where $m_2 > m_1$ hung vertically over a frictionless pulley. Consider both the string and pulley are negligible mass. Find the magnitude of the acceleration
    a. $a = \frac{m_1+m_2}{m_1-m_2}g$
    b. $a = \frac{m_2-m_1}{m_1-m_2}g$
    c. $a = \frac{m_2-m_1}{m_1+m_2}g$
    d. $a = \frac{m_1-m_2}{m_1+m_2}g$
12. During fluid flow the temperature is developed due to
    a. Translation kinetic energy
    b. Increase in density
    c. Change in pressure
    d. Fluid level
13. Which of the following is correct
    a. Gauge pressure = Absolute pressure + atmospheric pressure
    b. Absolute pressure =gauge pressure + atmospheric pressure
    c. atmospheric pressure= Gauge pressure + Absolute pressure
    d. None of the above
14. For simple harmonic oscillator which of the following pairs of vector quantities can't be both points in the same direction (the position vector is the displacement from the equilibrium)
    a. Position and velocity
    b. Velocity and acceleration
    c. Acceleration and speed
    d. Position and acceleration
15. when the particle is move along straight path then particle has
    a. only tangential acceleration
    b. only centripetal acceleration
    c. both tangential and centripetal acceleration
    d. none of the mentioned

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General Technology, Exam Code 03

Instruction: Choose the best answer and put the letter of your choice on the answer sheet

1. Given a cylindrical section below, which one of the following is more stable in reference to the ground?

A.  B.  C.  D. 

2. The weight of Kassu and Temesgen is 80Kg and 75Kg respectively. If the weight of Meseret is 15Kg less than Temesgen, which one of the following is false?
   A. The ratio of weight of Kassu to Temesgen is 16:15.
   B. The ratio of weight of Kassu to Temesgen is 16:3.
   C. The ratio of weight of Kassu to Temesgen to Kassu is 16:15:12.
   D. The ratio of weight of Kassu to Temesgen to Kassu is 16:15:3.
   E. B and D are answers.
3. Suppose you are given three coins of the same size, two with equal weight and one with less. How many times should an engineer should weigh to identify the lighter one putting on a balance weight?
   A. One B. Two C. Three D. None