



UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
UNIVERSITY MATRICULATION EXAMINATION SCREENING TEST
OCTOBER 26TM 2005

USE OF ENGLISH

Time allowed: 30 minutes

Read the following instructions carefully

1. Use **HB pencil** to shade in your answers, Ensure that any shading in error is thoroughly erased.
2. Candidates should write their full **Names** (surname first). **JAMB Registration number. Paper code, Sex. JAMB score. Faculty of first and second choice** and the **Question Paper Option** Given to them in the appropriate spaces on the **Answer Sheets**.
3. Attempt all questions.
4. The use of calculators and/or similar electronic devices is **NOT** allowed

Read the passage 1 below carefully and answer the questions that follow. Each question carries 2 marks

PASSAGE I

How can people be sure that they are truly marrying people with whom they are truly compatible? One way is by taking time to get to know the other person. Researchers have found that couples seem to go through three stages in this process. First, each person tries to measure his or her good and bad qualities against those of the other person. People tend to be drawn to others who seem to have about the assets and liabilities they themselves possess. Second, people look for compatible beliefs, attitudes and interests to support the initial attraction. It is not until the third stage that people reveal to each other how they handle responsibilities, react to disappointments and cope with a wide variety of situations. The key to compatibility **is** for the couple to be sure that they have arrived at this last stage before they think seriously about marriage. Such people are less likely to be unpleasantly surprised than those who marry quickly.

1. According to the author couples get to a crucial stage in their relationship
(a) when they show their assets and liabilities (b) when they display responsibility and positive attitudes
(c) when they look for compatible beliefs and attitudes (d) when they show how they react to circumstances
2. From the passage, we learn that compatibility is measured in terms of (a) good and bad qualities
(b) adequate knowledge of each other (c) individual responsibility (d) reactions to a variety of situations
3. The primary audience(s) for the above passage are (a) young unmarried adults (b) people seeking compatibility in their partner (c) those who fall in love at first sight (d) the general public and marriage counsellors

4. The best title for the passage is (a) researches on marriage compatibility (b) liabilities and assets in marriage (c) compatibility in marriage (d) responsibility in marriage
5. To be unpleasantly surprised" in the passage means to be
(a) physically prepared for any eventuality (b) psychological prepared for my eventuality
(c) seriously shocked by the outcome of the union (d) taken unawares when marriage is done.

Read passage II carefully and answer the questions that follow. Each question carries 2 mark

PASSAGE II

The approach to the University is being restructured to ease the flow of traffic, give better security and provide an appropriate introduction to a set of higher learning. The Works and Services Complex is also under construction, and we intend to move into the completed (major) part of it within the next few weeks.

All these projects are being extended with, an eye to aesthetics, for we recognize the important influence of a beautiful and healthy environment on its inhabitants and feel that a cluster of buildings on a small space such as we have should be so well designed as to have a beneficial, psychological and sociological effect on all members of the community.

I have gone to these lengths to itemize these examples of current development for two main reasons. Firstly, to advise you that the road diversions and other physical inconveniences currently being experienced will be on the increase, because of intense development activity. We therefore appeal to you to bear with us in full knowledge and consolation that such inconveniences are temporary and will soon yield final tangible results.

Secondly, to demonstrate our capacity for executing approved projects with dispatch, and to ensure" Government that we are up to the task. Indeed, I can assure Government that its ability to disburse funds to us will be more than matched by capacity to collect and expend them on executing various projects in record time.

6. From the passage, we can gather that .
(a) There is not much consideration for the health of the inhabitants
(b) the inconvenience suffered by the inhabitants will be for a while
(c) there is deliberate effort to inconvenience the people (d) projects are carried out without approval
7. Unless it can be shown that the money voted for projects can be spent on them in good time
(a) the development activity will not be intense (b) it will not be easy to convince the Government of our executive ability (c) it will not be difficult to ask Government for funds
(d) the road diversion and other inconveniences will continue
8. An eye to aesthetics" in this passage means:
(a) A regard for space (b) A beneficial psychological effect
(c) A regard for health (d) A consideration for beauty
9. In the passage, the author tries to explain why
(a) it is necessary to establish the Works and Services Complex in the University

- (b) beauty should be taken into consideration when building on such a small space as we have
 - (c) the gateway to the University is being rebuilt
 - (d) a major part of the project should be completed in the next few weeks
10. Which of these is NOT among the reasons given by the author for enumerating the examples of the current development? (a) To show that we are capable of executing approved projects
 (b) To convince the Government that we can be trusted with the task
 (c) The inconvenience currently being experienced will go on indefinitely
 (d) We are fully aware of the inconveniences being caused but we do not want you to complain

In each of the following sentences there is one or group of words underlined and one gap. From the list of words lettered A to D, choose the word or group of words that is most nearly OPPOSITE in meaning to the underlined word that will at the same time fill the gap in the sentence.

11. Ireti was able to kindle the fire which my father had to.....later
 (a) kill (b) switch (c) extinguish (d) destroy
12. Josephine is loquacious while her younger sister is.....
 (a) polite (b) intelligent (c) considerate (d) taciturn
13. In his valedictory address, the professor quoted copiously from his.....lecture
 (a) inaugural (b) academic (c) original (d) scholarly
14. The chairman vacillated in a matter that required.....action
 (a) courageous (b) decisive (c) authoritative (d) reflective
15. Although the attack of malaria was sudden, the cure was rather.....
 (a) permanent (b) extended (c) delayed (d) gradual
16. A guest should not make derogatory but.....remarks about the food he is served by his host
 (a) cheating (b) complimentary (c) polite (d) appetizing
17. It is surprising to find her condoning instead of.....such gross misbehaviour
 (a) disliking (b) disparaging (c) blaming (d) condemning
18. The general said that raw troops were no good to him, he needed.....veterans
 (a) seasoned (b) weathered (c) processed (d) baked
19. At certain times, some insane people appear to be as.....as. you or I
 (a) normal (b) intelligent (c) sober (d) sensitive
20. The headmaster criticized John for his use of coarse language, but complimented Helen on her (a)
 refined (b) organized (c) pure (d) clean
21. After the long journey, we eventually escaped from the turmoil of the .city into the ----- of the
 countryside (a) loneliness (b) relief (c) tranquility (d) stability
22. We should all have been greatly fortified by a meal, but we had only drinks which.....us
 (a) poisoned (b) weakened (c) starved (d) worried

23. For a speech to have its desired effect. It must be explicit, not.....
 (a) vague (b) flamboyant (c) wordy (d) difficult
24. There was chaos in the village and the police had to work for hours before.....could be restored
 (a) quiet (b) law (c) restraint (d) order

In each of questions 25 and 26, choose the word that has a different stress pattern from the other

25. (a) calendar (b) blackboard (c) suffer (d) success
26. (a) madam (b) comment (c) contribute (d) embarrass

In question 27 to 40, choose the option that is nearest in meaning to the word(s) or phrase(s) underlined

27. If experience is anything to go by, the action will prove a political minefield
 (a) a source of political benefit (b) a way out of political trouble (c) a cause for political joy
 (d) an invitation to political problems
28. In my view, the play didn't come off
 (a) succeed (b) fail (c) attract applause (d) take place
29. When the chips are down, will know those who have the courage to stand
 (a) when we get to a crisis point (b) in the final analysis (c) when the blocks are lowered
 (d) when we get to the end of the road
30. She said boxing is in fact her pet aversion
 (a) something she likes very much (b) something she dislikes very much
 (c) a hobby she loves to pursue (d) one thing she can't miss
31. The gateman does his work perfunctorily
 (a) without commitment (b) with speed (c) grudgingly (d) enthusiastically
32. Members of the panel were working at cross purposes
 (a) in harmony (b) in disunity (c) for selfish purposes (d) for selfless purpose
33. The young man who distributed political pamphlets on campus was promptly repudiated (a) disowned
 (b) arrested (c) warned (d) killed
34. Joseph is a die-hard criminal
 (a) hard to kill (b) hard to arrest (c) remorseless (d) relentless
35. If your life is in turmoil, always take courage (a) deviation (b) crisis (c) trial (d) tragedy
36. Do you know one of the most astounding events of my life?
 (a) special (b) amazing (c) serious (d) outstanding
37. Adeniji is suffering from the consequences of alienation
 (a) confinement (b) isolation (c) enclosure (d) imprisonment

38. Some children mimic their teachers (a) imitate (b) ridicule (c) tense (d) worship
39. Wealthy citizens are often niggardly in their ways
(a) contemptible (b) beggarly (c) sordid (d) stingy
40. I like Jude because He is very outspoken (a) fluent (b) frank (c) audible (d) talkative

GENERAL PAPER

INSTRUCTIONS

Time allowed: 1hour 15 minutes

Use **an HB pencil** to shade in your answers. Ensure that any shading in **error** is thoroughly erased. Candidates should write their full **Names** (surname first). **JAMB Registration number. Paper code. Sex. JAMB score. Faculty of first and second choice** and the **Question Paper Option** given to them in the appropriate spaces on the **Answer Sheets**.

Attempt all questions.

The use of calculators and/or similar electronic devices is **NOT** allowed.

- Which of the following is the best known semi-conductor?
(a) carbon (b) Selenium (c) Gallium arsenide (d) Germanium
- The process of adding semiconductor is called
(a) Transmutation (b) Doping (c) Polarization (d) Hydrolysis
- In the D.C electric motor, which of the following does not apply?
(a) Spindle (b) Fixed carbon brushes (c) Powerful magnetic field (d) Slip rings
- In the A.C. generator, which of the following does not apply?
(a) Fixed carbon brushes (b) Spindle (c) Split rings (d) Powerful magnetic field
- Which of the following law is an application of the law of conservation of energy?
(a) Maxwell's law (b) Lenz's law (c) Faraday's law (d) Fleming's left hand rule
- The induction coil is a device for generating a
(a) High voltage from low A.C. source (b) low voltage from high D.C. source
(c) High voltage from a low D.C. source (d) low voltage from a low A.C. source
- Which of the following pairs of quantities have equivalent units?
(a) work done and moments (b) Energy and momentum (c) strain and Young's modulus
(d) energy and pressure
- The dimension of power is (a) $ML^{-1}T^2$ (b) ML^2T^{-2} (c) ML^2T^{-3} (d) $ML^{-1}T^{-2}$
- A body starts from rest and moves with an acceleration of $8ms^{-2}$ for 10 seconds. Find the distance during the 8th second (a) 256m (b) 196m (c) 120m (d) 60m
- One of the limitations of Bohr's model of the atom is that it does not explain

- (a) The stability of the atom (b) Variation of the atomic radius
(c) The line spectra of hydrogen (d) The experiment determination of the atomic radius
11. X-rays were discovered by
(a) Isaac Newton (b) Michael Faraday (c) Sir J.J. Thompson (d) W. Roentgen
 12. Natural radioactivity was discovered by
(a) Niel Bohr (b) Henri Becquerel (c) De Broglie (d) Rutherford
 13. The number of atoms of a radioactive substance is initially 8.0×10^{16} . If the number reduces to 2.0×10^{16} in 64 minutes. What is the half-life of the substance?
(a) 82min (b) 16min (c) 8min (d) 4min
 14. During the electrolysis of copper (II) sulphate solution, an ammeter showed a steady current reading of 1.0A for $\frac{1}{2}$ hr and 6.6×10^{-4} kg of copper were liberated. Calculate the % error in ammeter reading,
(a) 12% (b) 11% (c) 1.2% (d) 1.1%
 15. An electric lamp has the following markings 230V, 250W, How long would it take the lamp to use one kilowatt-hour when connected to a 230V mains?
(a) 8.0hr (b) 6.0hr (c) 4.0hr (d) 2.0hr
 16. Which of the following statements is correct about a semi-conductor at room temperature
(a) The valence band is filled and the conduction band is partly filled
(b) The valence band is completely filled and the conduction band is completely empty
(c) The valence band is almost filled and the conduction band is almost empty
(d) The valence band is empty and the conduction band is filled
 17. Which of the following statements is not correct?
(a) When ebonite rod is rubbed with wool the ebonite rod acquires a negative charge and wool acquires a positive charge (b) When a glass rod is rubbed with silk the glass rod acquires a positive charge while silk acquires a negative charge (c) When fur is rubbed with ebonite rod the ebonite rod acquires a positive charge and fur a negative charge (d) When wool rubbed with an ebonite rod is brought near silk rubbed with a glass rod attraction occurs.
 18. With the Daniel cell the depolarizer is
(a) Tetra-oxo-sulphate (IV) acid (b) Ammonium chloride solution
(c) Copper sulphate solution (d) Manganese (IV) Oxide
 19. Which of the following arrangements gives the electromagnetic radiation in their ascending order of wavelength?
(a) Radio waves, ultraviolet rays, x-rays, γ -rays
(b) γ -rays, x-rays, ultraviolet rays, radio waves (c) x-rays, γ -rays, radio waves, ultraviolet Rays
(d) ultraviolet rays, γ -rays, x-rays, radio waves
 20. Which of the following statements is not correct about the astronomical telescope under normal adjustment
(a) The final image is at infinity (b) The principal foci of the objective and eye piece coincide (c) The final image is at principal focus of the eye piece

- (d) The distance between the lenses is equal to the sum of their focal lengths
21. Which of the following colours gives the least separation when white light is dispersed by a triangular glass prism? (a) Red and blue (b) Yellow and green (c) Orange and indigo (d) Green and violet
 22. An object weighs 100N on the earth's surface. Find its weight at a point P with orbital radius 2R. [$g = 10\text{Nkg}^{-1}$]. (a) 40.0N (b) 35.0N (c) 25.0N (d) 20.0N
 23. A gas occupies a volume of 40cm^3 at a temperature of 27°C , and a pressure of 80cmHg . What volume does it occupy at 87°C and pressure of 120cmHg ? (a) 3200cm^3 (b) 320cm^3 (c) 32cm^3 (d) 3.2cm^3
 24. A block and tackle system is used to lift a load of $20X$ through a vertical height of 10.5m . If the efficiency of the system is 40%, how much work is done against friction
(a) 310.0 J (b) 300.0 J (c) 290.0 J (d) 200.0 J
 25. Which of the following statements is correct about a short-sighted girl who does not put on glasses?
(a) She cannot see near objects clearly (b) Rays of light from a distant object are focused behind her retina (c) Her eyeball is too short (d) Parallel rays of light are focused in front of her retina
 26. Express 0.0000407 in standard form (a) 40.7×10^{-6} (b) 4.07×10^{-5} (c) 4.07×10^{-4} (d) 4.07×10^{-2}
 27. The sum of three numbers in base two is 11101. If the first two numbers are 1011 and 1101 find the third number (a) 11_{two} (b) 101_{two} (c) 1011_{two} (d) 1111_{two}
 28. A businessman decided to give 10% discount on all the purchases from his store. How much would a customer pay for a shirt originally marked ₦540?
(a) ₦ 594.00 (b) ₦ 550.00 (c) ₦ 530.00 (d) ₦ 486.00
 29. Solve the equation $3^x = 1/81$ (a) 4 (b) 3 (c) -4 (d) -3
 30. Simplify $\text{Log}_3 27 + 2\text{Log}_3 9 - \text{Log}_3 54$ (a) $2 + \text{Log}_3 2$ (b) $1 - \text{Log}_3 3$ (c) $-\text{Log}_3 2$
 31. Express y in terms of x if $\frac{1}{2} \log_2 (y + 3) = 2x$ (a) $y = 2^{4x} - 3$ (b) $y = 2^x - 3$ (c) $y = 2^{4x} - 9$ (d) $y = 2^x + 9$
 32. Without using tables, simplify $\log_3 9 + \log_3 243 - 2\log_3 9$ (a) 3 (b) 2 (c) 1 (d) 0
 33. Given that $p(x) = 2x^2 + 5x^2 - 9x - 18$, find the value of $p(-1)$ (a) 6 (b) 5 (c) -6 (d) -5
 34. Given that $Q(X) = ax^2 + bx + 1$ and $Q(1) = 6$ and $Q(-1) = 2$, determine the value of a and b
(a) $a = 5; b = 3$ (b) $a = 3, b = 2$ (c) $a = -3, b = -2$ (d) $a = -5, b = -3$
 35. P varies directly with R and inversely with the square of Q. $P = 12$ when $R = 18$ and $Q = 2$. Find the constant, K of the variation (a) $4/3$ (b) $8/3$ (c) $3/4$ (d) $3/8$
 36. When repaying a loan the number of monthly payment, m, varies inversely with the amount of each payment ₦A if the loan can be repaid by 10 monthly payment of ₦1,350. Find how long it takes to repay the loan with monthly payment of ₦750 (a) 100 (b) 90 (c) 10 (d) 9
 37. If $(x + 3)$ varies directly as y and $x = 3$ when $y = 12$ what is the value of x when $y = 8$?
(a) 1 (b) $\frac{1}{2}$ (c) $-1/2$ (d) -1
 38. Find the sum of the first twenty linear sequence 5, 9, 13, 17... (a) 1000 (b) 960 (c) 880 (d) 860
 39. The third term of a geometric progression (G.P) is 63 and the fifth term is 567 find the sum of the first six terms of the progression. (a) 2548 (b) 2448 (c) 2348 (d) 2248

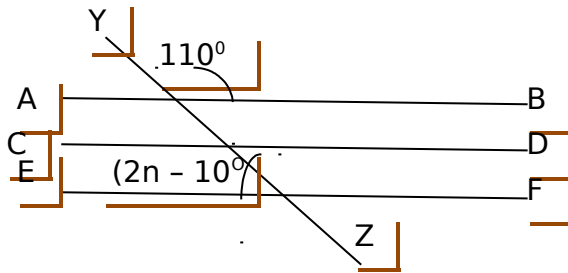
40. Solve the inequality $m/3 + 1/4 > 3m/8$ (a) $m > -6$ (b) $m > 6$ (c) $m < +16$ (d) $m < -6$

41. Evaluate the following determinant

$$\begin{vmatrix} 2 & -1 & -3 \\ -5 & 2 & 4 \\ 1 & 0 & -6 \end{vmatrix}$$

(a) 8 (b) 7 (c) 6 (d) 5

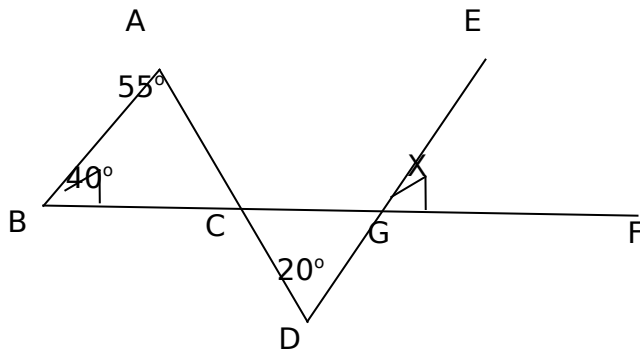
42. In the diagram AB, CD and EF are parallel lines find the value of n



(a) 10° (b) 40° (c) 50° (d) 60°

43. Point P, Q and R are located in the same horizontal plane such that Q is 12km north of P and R is on a bearing of 270° from P. If $[PR] = 6\text{km}$, calculate with respect to one decimal place $[QR]$

(a) 18km (b) 13.4km (c) 13km (d) 10.4km



44. In the diagram above, find the Value of x (a) 85 (b) 75 (c) 65 (d) 40

45. The Angle of depression of a boat at sea from the top of a cliff is 82°

What is the angle of elevation of the top of the cliff from the boat? (a) 98° (b) 90° (c) 88° (d) 82°

46. Given that $\sin\theta = 5/13$, find the value of $2 - \sec^2\theta + \cot\theta$

(a) 1 (b) 144/35 (c) 35/144 (d) 7/144

47. The interior angle of a regular polygon is thrice the exterior angle. How many sides has the polygon,

(a) 9 (b) 8 (c) 7 (d) 6

48. Differentiate with respect to x the function $y = (2x + 4)(3x - 1)$

(a) $3x+10$ (b) $12x$ (c) $12x + 5$ (d) $12x+10$

49. Find dy/dx if $x^2y - 5x = 3$ (a) $5 - 2xy/x^2$ (b) $5 - xy/x$ (c) $5 + 2xy/x$ (d) $5 - 3xy/x$
50. Differentiate with respect to x , $y = \sin(2x - 4)$
 (a) $4\cos(2x - 4)$ (b) $3\cos(2x - 4)$ (c) $2\cos(2x - 4)$ (d) $2\cos(2x + 4)$
51. Which of the following is a physical change?
 (a) The bubbling of chlorine into water (b) The passing of steam over heated iron
 (c) The burning of substances in air (d) The dissolution of sodium chloride in water
52. A mixture of oil and water can be easily separated by
 (a) paper chromatography (b) evaporation to dryness (c) using a separating funnel (d) fractional distillation
53. Bronze is a/an (a) metal (b) compound (c) mixture (d) element
54. To separate a mixture of benzene, ethanol and water use
 (a) filtration (b) decantation (c) simple distillation (d) fractional distillation
55. Hydrogen forms two oxides. In the first oxide, 2g of hydrogen combine with 16g of oxygen. In the second oxide, 2g of hydrogen combine with 32g of oxygen. What law is illustrated?
 (a) The law of constant proportion (b) The law of conservation of matter
 (c) The law of multiple proportion (d) The law of reciprocal proportion
56. Lead forms two chlorides. The ratio of chloride atoms in the two chlorides is 1:2. If the mass of chlorine in the second chloride is 42.0g, find the mass of chlorine in the first compound
 (a) 71g (b) 72g (c) 21g (d) 73g
57. According to the balanced equation below, which gas is in excess and by how much?

$$\text{H}_{2(g)} + \text{F}_{2(g)} \rightarrow 2\text{HF}_{(g)}$$

$$50\text{dm}^3 \quad 60\text{dm}^3$$
 (a) F is in excess by 6dm^3 (b) F is in excess by 10dm^3 (c) H is in excess by 10dm^3
 (d) HF is in excess by 100dm^3
58. Which is heavier. 0.2mol SO_2 or 0.2mol CO_2 ? [S = 32. O = 16. C = 12].
 (a) SO_2 is heavier by 4g (b) CO_2 is heavier by 44g (c) SO_2 is heavier by 0.4g (d) CO_2 is heavier by 40g
59. A gas jar of air was placed on top of a gas jar of nitrogen IV oxide. After sometime, a uniform colour was seen throughout both gas jars. What process has occurred?
 (a) evaporation (b) oxidation (c) decomposition (d) diffusion
60. At 17°C , a sample of hydrogen occupies 125cm^3 . What will the volume be at 100°C . if the pressure remains constant? (a) 161cm^3 (b) 1.61cm^3 (c) 131cm^3 (d) 16.1cm^3
61. Which of the following atoms A, B, C and D would readily form an ion with a charge of 2?

	Mass No.	Atomic No.
(a)	12	6
(b)	16	8
(c)	24	12
(d)	31	15

62. The ion X contains 23 particles in the nucleus and 10 electrons outside the nucleus. What does the nucleus of the ion contain?
- | | Protons | Neutrons |
|-----|----------------|-----------------|
| (a) | 10 | 13 |
| (b) | 11 | 12 |
| (c) | 12 | 11 |
| (d) | 13 | 10 |
63. Which of the following are properties of carbon in the form of diamond?
- | | Conductivity | Melting point |
|-----|---------------------|----------------------|
| (a) | nil | -101°C |
| (b) | nil | 119°C |
| (c) | nil | 3500°C |
| (d) | good | 2600°C |
64. What particles are present in solid bromide and molten lead II bromide
- | | Solid PbBr₂ | Molten Pb |
|-----|-------------------------------|------------------|
| (a) | ions | ions |
| (b) | molecules | molecules |
| (c) | ions | atoms |
| (d) | atoms | molecules |
65. The non-luminous Bunsen flame has following characteristics except
- (a) the flame is hotter (b) the flame is cleaner
 (c) the flame enters the tube to consume incoming fuel (d) only three /ones can be seen in the flame
66. Water of crystallization is responsible for
- (a) shapes of crystals (b) melting salts (c) for purity of crystals (d) boiling point of salts
67. The substance which loses its water crystallization on exposure to air is
- (a) deliquescent (b) efflorescent (c) hygroscopic (d) crystalline
68. 15g of water dissolves 3.5g of sodium chloride at 25°C. What is the solubility of the sodium chloride at that temperature? [Na = 23. Cl = 35.5]
- (a) 0.4mol dm⁻³ (b) 4.0 mol dm⁻³ (c) 40 mol dm⁻³ (d) 400 mol d⁻³
69. To determine the solubility of a salt in the laboratory, you need a/an
- (a) saturated solution of the salt (b) unsaturated solution of the salt
 (c) supersaturated solution of the salt (d) homogenous solution of the salt
70. The major water pollutant is (a) spillage of oil (b) pesticide (c) detergent (d) sewage
71. Which of the following acids is monobasic (a) H₂CO₃ (b)H₂SO₃ (c)CHCOOH (d) H₂SO₄
72. Which is the function of silica SiO₃ in the equation shown? CaO + SiO₂ CaSiO₃ (a) A basic oxide
 (b) a reducing agent (c) an acidic oxide (d) an oxidizing agent

73. Which of the following substances is not a polymer (a) Nylon (b) Polyethane (c) Propane (D) Starch
74. The oxidizing agent in the reaction $\text{H}_2\text{S}_{(g)} + \text{Br}_{2(g)} \rightarrow 2\text{HBr}_{(g)} + \text{S}_{(s)}$ is (a) H_2S (b) Br_2 (c) HBr (d) S
75. The preferential discharge of sodium during the electrolysis of brine using mercury as cathode is due to one of the following (a) High concentration of Na (b) Na is lower than H in the electrochemical series (c) Discharge of sodium as the amalgam requires less energy (d) Concentration of H^+ is higher

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIVERSITY MATRICULATION EXAMINATION SCREENING
WEDNESDAY OCTOBER 12TM 2006

Time allowed: 1 hour

SECTION A: ENGLISH

INSTRUCTIONS

Read the following instructions carefully

1. Use an **HB pencil** to shade in your answers. Ensure that any shading in error is thoroughly erased.
2. Candidates should write their names **JAMB Registration** numbers and the **Question Paper Option** given to them in the appropriate spaces in the **Answer** Sheet.
3. Write your JAMB Registration number on the Question Paper in the space provided at the top of Page1.
4. Attempt all questions
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PASSAGE I

INSTRUCTION: Read the following passage and answer the questions through the options that follow

Every work of art is the child of its age and, in many cases, the mother of our emotions. It follows that each period of culture produce an art of its own which can never be repeated. Efforts to revive the art principles of the past will at best produce an art that is still-born. It is impossible for us to live and feel as the ancient Greeks. In the same way those who strive to follow the Greek methods in sculpture achieve only a similarity of form, the work remaining soulless for all time. Such imitation is mere ping.

Externally the monkey completely resembles the human being, he will sit holding-a book in front of his nose and turn over the pages with a thoughtful aspect but his actions have for him no real meaning.

There is, however, in art another kind of external similarity which is founded on a fundamental truth. When there is a similarity of inner tendency in the whole moral and spiritual atmosphere a similarity of ideas, at first closely pursued but later lost to sight, a similarity in the inner feeling of any one period to that of another, the logical result will be a revival of the external forms which served to express those inner feelings in an earlier age. An example of this today is our sympathy, our spi rituals relationship, with the Primitives. Like ourselves, these artists sought to express in their work only internal truths, renouncing in consequence all considerations of external form.

This all-important spark of inner life today is at present only a spark. Our minds, which are even now only just awakening after years of materialism, are infected with the despair of unbelief, of lack of purpose and ideal. The nightmare of materialism, which has turned the life of the universe into an evil useless game, is not yet past; it holds the awakening soul still in its grip. Only a feeble light glimmer like a tiny star in a vast gulf of darkness. This feeble light is but a presentiment, and the soul, when it sees it trembles in doubt whether the light is not a dream and the gulf of darkness reality. This doubt and the still-harsh tyranny of the materialistic philosophy divide our soul sharply from that of the Primitive rings cracked when we seem to play upon it, as does a costly vase, long buried in the earth, which is to have a flow which it is dug once more. For this reason, the Primitive phase, through which we are now passing with its temporary similarity of form, can only be of short duration.

QUESTIONS

1. Which of the following is the best title for this passage? (a) The Art of the early 20th Century (b) The Dangers of Materialism (c) Why Primitive Art cannot be Rekindled (d) The Similarities in Artistic Movements
2. In context, the word "aspect" in paragraph one most nearly means (a) meaningful perspective (b) facial expression (c) configuration (d) contemplation
3. Which of the following is an example of the "fundamental truth" mentioned in paragraph two (a) the inability of great artists like Vincent Van Gogh to achieve fame in their lifetime (b) the tendency of artist from all cultures to eschew social conventions (c) the failure to reproduce artwork that was created in the fourth Century BC (d) the similarity between two paintings created a century apart, each in the midst of a great class war
4. In saying that the soul "trembles in doubt" in paragraph three when it sees the "feeble light" in the same paragraph, the author suggests, that (a) artists have doubts about whether the era of materialism is truly past (b) the public is unsure that its hunger for art will be met (c) artists do not know from where their next inspiration will come (d) the Primitives found mysterious lights more frightening than modern people do
5. How would the author characterize the effect of materialism on the artist's soul? (a) supportive (b) confusing (c) calming (d) oppressive

PASSAGE 2

It is capital misery for a man to be at once both old and ignorant. If he were only old, and had some knowledge, he might lessen the tediousness of decrepit age by the pleasures of contemplation. If he were young, though he knew nothing, his later years would serve him to labour and learn, so that in "the winter of his time" when he is weary, he might find some comfort in his chair. But now, there is no man as wretched as he whose body is being

withered by the passage of time and whose mind is totally unfurnished by those great ideas of science and the world in general.

A grey head with a wise mind is a treasure of grave precepts, experience and judgment. But foolish old age is a barren vine in a season of harvest, or a university where foolishness is studied: every action is a pattern of infirmity. While his body sits, he does not know to find his mind's action; and there is no life as burdensome or disgusting as that of idleness.

What then? Knowledge is not hurtful, but helps a good mind; anything that is laudable to learn. If I die tomorrow, my life today shall somewhat be sweeter for knowledge; and if my days prove a summer one, it will be perfectly all right to have my mind as my companion. I remember the answer given by Antisthenes, the Athenian philosopher, when he was asked what he had gained from all his studies. "By them is said "I have learned both to live and talk with myself".

QUESTION

6. The word 'capital' (line 1) most nearly means
(a) much discussed (b) centrally fixed (c) critically important (d) deadly true
7. According to the author, the pains of old age can be made more bearable if one
(a) is sufficiently wealthy (b) is well educated (c) understands science (d) inherited good genes
8. The chief advantage in being young according to the passage is that one has
(a) strength and good health (b) time to enjoy life without weakness
(c) future years in which to acquire knowledge (d) prospects of avoiding troubles of old age
9. The winter of one's life according to the passage most nearly means
(a) years of illness and bad health (b) times of misfortunes and bad luck (c) youth and its normal ignorance (d) old age and its infirmities
10. Which of the following is the most striking characteristic of the language in the above passage?
(a) rich use of figures of speech (b) abstract diction and argument
(c) unusually complex verbal structures (d) simple and direct sentences

Use the correct word from the following to fill the numbered gaps in the passage below. Try to determine the meaning of unknown words using context or word analysis.

To most people 11 and encyclopaedias are closely linked and are sometimes considered 12 but they are essentially different kinds of 13 works with different purposes. A dictionary is a book that lists words in 14 order and describes their 15. Modern dictionaries often include 16 about spelling, pronunciation, word origin, usage, synonyms, and grammar and sometimes pictures as well. An 17 on the other hand, is a collection of articles about every branch of 18. Although their 19 and descriptions go beyond the information given in the 20.

A	B	C	D
11. dictionaries	stories	novels	textbooks
12. different	right	wrong	interchangeable
13. same	different	true	false
14. alphabetical	serial	numerical	grammatical
15. illustrations	pictures	meanings	statures
16. news	information	stories	beliefs
17. illustrations	analysis	encyclopaedia	imagery
18. trees	subjects	grammars	knowledge
19. description	illustration	definition	comments
20. textbook	novel	story	dictionary

Choose among the options, the one that has the opposite meaning to the word or group of words underlined in the sentences to fill the missing word(s).

21. The diligence of the man contrasts with the _____ of his wife
 (a) insolence (b) indiscipline (c) indolence (d) disguise
22. A generous man is not expected to marry a _____ woman
 (a) garrulous (b) mean (c) gentle (d) vociferous
23. While Osawe met with _____ in the competition, Roli met with fiasco
 (a) success (b) fidelity (c) disappointment (d) dangerous
24. This expired drug will not assuage your feverish condition, it will rather _____ it
 (a) amend (b) worsen (c) ameliorate (d) relieve
25. The girl is vivacious today, unlike yesterday when she was _____ for the greater part of the day
 (a) veracious (b) ferocious (c) moody (d) voracious

In question 26 to 30, a list of interpretations is given below every sentence or phrase. Choose the Interpretation that gives the correct meaning of the underlined idiom in the sentence or phrase.

26. To carry coals to Newcastle
 (a) to take things to where they are in abundance already (b) to dirty a place known to be ever neat
 (c) to bring shame to a place and its people (d) to behave ungrateful to a mentor.
27. Sarah's classmates have sent her to the Coventry. This means Sarah is
 (a) well-loved by her classmates (b) so gullible a girl that her mates cheat her every time
 (c) ostracized by her classmates (d) a brilliant representative of her class
28. My brother left me in the lurch last year. This means my brother

- (a) made me learn my lesson in a hard way (b) did not wait for me before he took an important decision (c) forsook me in time of problem (d) set a trap for me
29. We advised the highly educated boy to put his pride in his pocket at the village meeting. This Means (a) to behaves simply and ordinarily (b) to speak simple and understandable words (c) to wear traditional dress (d) not to speak at the meeting
30. The two communities have been advised to turn swords into ploughshares. This means the Communities (a) should encourage their people to plough the land (b) should substitute peace for hostilities (c) should replace old equipment with modern equipment (d) should invest huge money in agriculture

From the words lettered A - D, choose the one that best completes each of the following sentences

31. Chinedu _____ Chichidodo every time to face his studies squarely
(a) advices (b) advice (c) advise (d) advises
32. The illness of the woman was so serious that it took a team of medical experts days to (a) pull her over (b) to pull through (c) push her on (d) put her back
33. I _____ for sure that success
(a) know/exalt (b) knows/exalt (c) know/exalts (d) knows/exalts
34. If Nerisa failed the examination, she (a) shall repeat (b) would repeated (c) will repeat (d) would repeat
35. Let the boy _____ in the way he _____
(a) behaves/likes (b) behave/like (c) behaves/like (d) behave/likes
36. The boy _____ stand akimbo before the straightened principal
(a) dares on (b) dare not (c) is daring not (d) shall not dare
37. The man asked if I _____ my race (a) have run (b) had run (c) have ran (d) had ran
38. You need a spiritual rebirth to be able to _____ evil at all times (a) Ward off (b) ward away (c) walk out (d) work on
39. After he had worked astrenuously for six hours, all Caro could do was _____ (a) march (b) strut (c) run (d) trudge
40. Tamuro _____ Boateng's feelings last night (a) hurt (b) hurts (c) hurted (d) was hurting

SECTION B

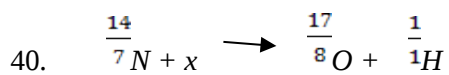
GENERAL PAPER (2006)

1. Which of the following is a fundamental unit
(a) Newton (b) Watt (c) Joule (d) second

2. Which of the following gases can be collected by the upward displacement of air?
(a)NO (b)H₂ (c)NH₂ (d)Cl₂
3. A car moving with a speed of 90kmh⁻¹ was brought uniformly to rest by the application of the brakes in 10s. How far did the car travel after the brakes were applied
(a) 125m (b) 150m (c) 250m (d) 15km.
4. To keep a vehicle moving at a constant speed v, requires power P. from the engine. The force provided by the engine is (a) p/v (b) ½ v (c) pv (d) p/v²
5. In the reaction IO₃ + 5I⁻ + 6H⁺ → 3I₂ + 3H₂O, the oxidizing agent is (a) H⁺ (b)I⁻ (c)IO₃ (d)I₂
6. An inclined plane which makes an angle of 30 with the horizontal has a velocity ratio of
(a) 2 (b) 1 (c) 0.866 (d) 0.50.
7. A cycloalkane with the molecular formula C₅H₁₀ has
(a) one Isomer (b) two Isomers (c) three Isomers (d) four Isomers.
8. A stone of mass **mkg** is held in meters above the flour for 50s. The work done in Joules over this period is (a) mh (b) mgh (c) 0 (d) mgh/50.
9. Three angles of a nonagon are equal and the sum of six other angles is 1110°. Calculate the size of one of the equal angle's
(a) 210° (b) 150° (c) 105° (d) 50°.
10. Find two values of y which satisfy the simultaneous equation x + y = 5, x² - 2y² = 1.
(a) 12, -2 (b) -12, 12 (c) -12, 2 (d) 2, -2.
11. What is the circumference of radius of the earth?
(a) Rcosθ (b) 2Rcosθ (c) Rsinθ (d) 2Rsinθ.
12. The electronic configuration of an element is 1s²s²2p⁶3s²3p³. How many unpaired electrons are there in the element? (a) 5 (b)4 (c)3 (d)2.
13. Which of the following ions is a pollutant in drinking water even in trace amounts (a)Ca²⁺(b)Hg²⁺
(c)Mg²⁺ (d) Fe²⁺.
14. Which of the following represents the types of bonding present in ammonium chloride molecule?
(a) ionic only (b) covalent only (c) ionic and dative covalent (d) dative covalent only.
15. Find the probability of selecting a figure which is a parallelogram from a square, a rectangle, a rhombus, a kite and a trapezium (a) 3/5 (b) 2/5 (c)4/5 (d) 1/5.
16. The air around a petroleum refinery is most likely to contain (a) CO₂ SO₃ & N₂O
(b) CO₂, CO & N₂O (c) SO₂ CO₂ & NO₂ (d) PH₃ H₂O & CO₂
17. Simply $1\frac{1}{2}$
2: 1/4 of 32
(a) 3/256 (b)3/32 (c)6 (d)85.

18. The base of a pyramid is a square side 8cm. If its vertex is directly above the centre, find the height given that edge is 43cm (a) 6cm (b) 5cm (c) 4cm (d) 3cm
19. which of the following gases will rekindle a brightly glowing splint (a) NO_2 (b) NO (c) N_2O (d) C_1_2 .
20. which of the following salts can be melted with decomposition. (a) Na_2CO_3 (b) CaCO_3 (c) MgCO_3 (d) ZnCO_3 .
21. A lamp is rated 240V, 60W the resistance of the filament is (a) 960Ω (b) 16Ω (c) 15Ω (d) 4Ω .
22. The number of neutrons contained in nucleus of U_{92}^{238} is (a) 92 (b) 146 (c) 238 (d) 330.
23. which of the following is the most suitable for use as an altimeter? (a) a mercury barometer (b) a fortin barometer (c) a mercury manometer (d) an aneroid barometer
24. when a plane mirror at which a ray is incident is rotated through an angle θ , The reflected ray will be rotated through (a) $\frac{1}{2}\theta$ (b) θ (c) 2θ (d) 3θ .
25. The minimum value of y in the equation $y = x^2 - 6x + 8$ is (a) 8 (b) 3 (c) 0 (d) -1.
26. A sample of orange juice is found to have a pH of 3.80. Which is the concentration of the hydroxide ion in the juice? (a) 1.6×10^{-4} (b) 6.3×10^{-11} (c) 6.3×10^{-4} (d) 1.6×10^{-11}
27. Find the sum of the first 21 terms of the progression -10, -8, -6.....
(a) 180 (b) 190 (c) 200 (d) 210.
28. Find the eleventh term of the progression. 4, 8, 16_
(a) 2^{13} (b) 2^{12} (c) 2^{11} (d) 2^{10}
29. Water for town supply is chlorinated to make it free from
(a) bad odour (b) bacteria (c) temporary hardness (d) permanent hardness
30. Which of the following obeys ohm's laws?
(a) glass (b) diode (c) all electrolytes (d) all metals.
31. The D.C. generator has essentially the same components as the A.C. generator except the presence of (a) slip-ring (b) carbon brushes (c) split ring (d) armature
32. Zener diode is used for (a) power amplification (b) current amplification (c) voltage regulation (d) energy conversion.
33. When a pure semiconductor is heated, its resistance (a) increases (b) decreases (c) remains the same (d) increases and then decreases.
34. Which of the following is formed when maltose reacts with concentrated tetraoxosulphate (VI) acid?
(a) coal tar (b) charcoal (c) toxic fumes (d) carbon (IV) oxide.
35. Which of the following metals will liberate hydrogen from steam?
(a) copper (b) iron (c) lead (d) mercury.
36. The fraction of crude oil used as jet fuel is (a) refinery gas (b) diesel oil (c) kerosene (d) gasoline.
37. Convert 241 in base 5 to base 8
(a) 71_8 (b) 107_8 (c) 176_8 (d) 241_8 .

38. Copper (II) tetraoxosulphate (VI) is widely used as a (a) fertilizer (b) fungicide (c) disinfectant (d) purifier.
39. How many grams of bromine will be required to completely react with 10g of propyne (a) 20g (b) 40g (c) 60g (d) 80g. [C = 12, H = 1, Br = 80]



In the above reaction, x is a (a) neutron (b) helium atom (c) lithium atom (d) deuterium atom.

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIVERSITIES MATRICULATION EXAMINATION SCREENING
THURSDAY SEPTEMBER 20TH 2007

Time allowed: 1 hour 10 minutes

SECTION A: ENGLISH.

INSTRUCTIONS

Read the following instructions carefully:

Use an **HB pencil** to shade in your answers. Ensure that any shading in error is thoroughly erased.

Candidates should write their names, **JAMB Registration numbers** and the **Question Paper Option** given to them in the appropriate spaces in the **Answer Sheet**.

Write your JAMB Registration number on the Question Paper in the space provided at the top of Page 1.

Attempt all questions.

The use of calculators and/or similar electronic devices is NOT allowed.

Read the following passage below and answer questions 1 to 5 that follow

Scattered around the globe are more than 100 small regions of isolated volcanic activity known to geologists as hot spots. Unlike most of the world's volcanoes, they are not always found at boundaries of the great drifting plates that make up the earth's surface; on the contrary, many of them lie in the interior of a plate. Most of the hot spots move only slowly, and in some cases the movement of the plates past them has left trails of extinct volcanoes. The hot spots and their volcanic trails are milestones that mark the passage of the plates.

That the plates are moving is now beyond dispute. Africa and South America, for example are receding from each other as new material is injected into the sea floor between them. The complementary coastlines and certain geological features that seem to span the ocean are reminders of where the two continents were joined. The relative motion of the plates carrying these continents has been constructed in detail, but the motion of one plate with respect to another cannot readily be translated into motion with respect to the earth's interior. It is not possible to determine whether both continents are moving or whether one continent is stationary and the other is drifting away from it. Hot spots anchored in the deeper layers of the earth, provide the measuring instruments needed to resolve the question. From an analysis of the hot spot population, it appears that the African plate has been stationary during the past 30 million years.

The significance of hot spots is not confined to their role as a frame of reference. It appears they have an important influence on the geophysical processes that propel the plates across the globe. When a continental plate comes to rest over a hot spot, the material welling up from deeper layers creates a broad dome. As the dome grows, it develops deep fissures; in at least a few cases the continent may rupture entirely along some of these fissures, so that the hot spot initiates the formation of a new ocean. Thus just as earlier theories have explained the mobility of the continents, so hot spots may explain their mutability.

QUESTIONS

1. The term 'hot spot' is used in the passage
(a) colloquially (b) rhetorically (c) technically (d) ambiguously
2. The author regards the theory that the plates making up the earth's surface move as
(a) discredited (b) irrefutable (c) relative (d) tentative
3. Which of the following statements indicate that Africa and South America once adjoined one another
I. they share certain common topographical traits II. their shorelines are physical counterparts
III. the African plate has been stable for 30 million years
(a) I only (b) II only (c) II and III only (d) I and II only
4. The underlined word "constructed" most nearly means
(a) interpreted (b) built (c) restricted (d) impeded
5. According to the passage, the hot spot theory eventually may prove useful in interpreting
(a) major changes in continental shape (b) the depth of the ocean floor
(c) the boundaries of the plate (d) the relative motion of the plates measurement

In questions 6 and 7, an idiom is underlined in each of the sentences, find under each sentence the group of words that give the nearest meaning to the idiom

6. Okili was the fly in the ointment in the family
(a) the only adventurous one (b) the only flying captain (c) the only quiet one (d) the only bad boy
7. The war was long, there were reverses on both sides; at last Kikuyu gained a pyrrhic victory
(a) a victory that came suddenly (b) a victory won at a high cost (c) a victory they did not deserve (d) a well-deserved victory

In questions 8 and 9, choose the word or set of words that best fits the meaning of the sentence as a whole

8. The wet clothes _____ outside to dry
(a) were hung (b) were hanged (c) was hung (d) was hanging
9. You can have _____ of these two books (a) either (b) none (c) any (d) some

In questions 10 and 11, select the option that is nearest in meaning to the underlined word

10. My attempts to see the Principal were all futile (a) unrecognized (b) bad (c) unsuccessful (d) clever
11. American journalists often make disparaging remarks about Africa
(a) derogatory (b) critical (c) bad (d) appreciative

In questions 12 and 13, choose from the options in A-D, the one which is opposite in meaning to the word underlined in each of the following sentences

12. We must maintain the obsolete equipment in our laboratory
(a) outdated (b) up-to-date (c) old fashioned (d) imported
13. The loan enabled him to procure new supplies
(a) purchase (b) give out (c) dispose of (d) stock up with

After each of the sentences in questions 14 and 15, is a list of possible interpretations. Choose the interpretation most appropriate for each sentence

14. The sky is very lonely, and even more so after midnight. By this, we understand that
(a) the sky is lonely even after midnight (b) the sky is somewhat lonely after midnight
(c) the sky is usually lonely, but not after midnight (d) although the sky is always lonely, one notices it most after midnight
15. The more I looked at the chart, the more puzzled I became. This means that the speaker
(a) was not puzzled until he saw the chart (b) studied the chart because he was puzzled
(c) could not understand the chart at all (d) was puzzled at first, but understood better when he studied the chart

SECTION B: GENERAL PAPER

Answer all questions

1. The dimension of Young's modulus is written as $M^xL^yT^z$. Determine the values of x, y and z, respectively
(a) $x = 1, y = -1, z = 2$ (b) $x = -1, y = 1, z = -2$ (c) $x = -1, y = 2, z = -2$ (d) $x = 2, y = 2, z = -1$
2. Two quantities that can be determined from a velocity-time graph are
(a) acceleration and work done (b) retardation and distance covered
(c) pressure and acceleration (d) mass and acceleration
3. A body of density 0.80kg^{-3} weighs 120N in air. It is suspended with a string with $\frac{1}{2}$ of its volume immersed in a liquid of density 0.6kgm^3 , find the tension in the string ($g = 10\text{ms}^{-2}$)
(a) 75N (b) 65N (c) 45N (d) 35N
4. Which of the following sources of energy is non-renewable?
(a) biomass (b) solar (c) wind (d) tides
5. Which of the following statements is correct about latent heat? It
(a) causes temperature rise (b) causes temperature fall (c) breaks down intermolecular forces (d) causes molecules to vibrate more violently
6. The energy carried by an electromagnetic radiation depends on
(a) intensity (b) velocity (c) mass (d) frequency
7. If the polarizing angle for a given optical material is 49° , calculate the refractive index of the material
(a) 1.15 (b) 0.75 (c) 0.66 (d) 1.75
8. The period of a S.H.M is 1.20sec when the length of the pendulum is 40cm, find the period when the length is increased to 90cm (a) 1.40s (b) 1.60s (c) 1.80s (d) 2.00s
9. Which of the following statements is not correct about the image formed by a pin-hole camera? It is Always
(a) in focus (b) magnified (c) real (d) inverted
10. Which of the following devices is not based on the motor effect?

- (a) hot-wire ammeter (b) moving-coil galvanometer (c) moving-coil loud speaker (d) electric motor
11. Find the value of y if $367 + 245 = 56y$ (a) 4 (b) 5 (c) 6 (d) 7
 12. $\frac{2}{5}$ of the students in a class offer further mathematics. If 14 students offer further mathematics, how many students are there in the class? (a) 30 (b) 35 (c) 40 (d) 45
 13. A motorway journey takes 3 hours at an average speed of 120km/h. How long will it take if the average speed is reduced to 80km/h? (a) 4 hours (b) 4.2 hours (c) 4.5 hours (d) 5.4 hours
 14. A storekeeper decided to give 10% discount on all purchases in his store during the 2007 Christmas season. How much would a customer pay for a television set that originally cost N24,000.00?
(a) N22,600.00 (b) N21,818.00 (c) N21,616.00 (d) N21,600.00
 15. If $x = 924^2 - 76^2$. Find the value of x in standard form
(a) 848000 (b) 8.48×10^{-3} (c) 8.48×10^5 (d) 4.8×10^5
 16. A man is five times as old as his son. If the sum of their ages is 72 years, find the difference between their ages (a) 48 years (b) 40 years (c) 38 years (d) 28 years
 17. Find the length of a side of a square which is equal in area to a rectangle measuring 45cm by 5cm
(a) 25cm (b) 23cm (c) 16cm (d) 15cm
 18. An arc of a circle of radius 6cm is 8cm long. Find the area of the sector
(a) 48cm^2 (b) 36cm^2 (c) 24cm^2 (d) $51/2\text{cm}^2$
 19. If two triangles are similar, which of the following is true? Their
(a) corresponding sides are equal (b) corresponding angles are equal (c) areas are equal
(d) perimeters are equal
 20. Each side of a regular convex polygon subtends an angle of 30° at its center. Calculate each interior angle (a) 75° (b) 95° (c) 150° (d) 155°
 21. Which pH value indicates a basic solution? (a) 11 (b) 3 (c) 0 (d) -1
 22. A measure of the degree of disorderliness in a chemical system is known as the
(a) activation energy (b) enthalpy (c) entropy (d) free energy
 23. Oxidation is the process of
(a) gain of electrons (b) loss of electrons (c) gain of hydrogen (d) loss of oxygen
 24. The pollution from petroleum spillage in rivers and lakes can best be dispersed by
(a) pouring detergents (b) passing of ships through the sea (c) pouring organic solvents
(d) evaporation
 25. A mixture of 12g of carbon and 64g of sulfur is heated until reaction is complete and none of the reactants is left over. What mass of the compound carbon II sulfide is formed?
(a) 152g (b) 15.2g (c) 76g (d) 760g
 26. Water is poured over a white solid and a colorless neutral gas is evolved which burns with a sooty flame. The white solid is (a) calcium (b) calcium oxide (c) calcium carbide (d) sodium peroxide

27. A brand of ink containing cobalt (II) chloride and iron II ions can be separated into its various components by (a) fractional crystallization (b) fractional distillation (c) sublimation (d) chromatography
28. Which of the following factors does NOT affect the rate of a chemical reaction between non gaseous reactants? (a) temperature of reaction mixture (b) presence of catalyst (c) surface area of reactants (d) weight of the products
29. The complete oxidation of butan-2-ol (a) butane (b) butanal (c) butan-2-one (d) butanoic acid
30. The main constituents of petroleum are (a) alkanes (b) alkynes (c) gases (d) hydrocarbons

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIVERSITIES MATRICULATION EXAMINATION SCREENING
THURSDAY, AUGUST 28th 2008.

Time allowed: 1 hour

INSTRUCTIONS

Read the following instructions carefully:

1. Use **HB pencil** to shade your answers. Ensure that any shading in error is thoroughly erased.
2. Candidates should write their **Names, JAMB Registration numbers and the Question Paper Option** given to them in the appropriate spaces in the **Answer Sheet**.
3. Write your **JAMB Registration numbers on the Question Paper** in the space provided at the top of Page 1.
4. **Attempt all questions.**
5. The use of calculators and /or similar electronic devices is **NOT** allowed

SECTION A: ENGLISH.

INSTRUCTION: From the work lettered A-D choose the word or group of words that is opposite in meaning to the underlined expression as it is used in the sentence.

1. Your _____ contrast with your brother's frugality.
A. stupidity B. extravagance C. frivolity D. meanness
2. Convocation ceremonies are always more colourful than _____ ceremonies.
A. registration B. graduation C. matriculation D. congress
3. While he is a staunch supporter of the president, she is a _____ member of the president's cabinet.
A. disloyal B. faithful C. vocal D. courageous
4. While the girl is bereft of ideas, the boy is _____ of ideas.
A. in need B. bereaved C. bankrupt D. full
5. While Umoru is believed to have a very placid temperament, Achaba is notorious for his _____ temperament.
A. platonic B. pleasant C. platitudinous D. violent
6. The woman was full of admiration for her husband but he treated her with _____.
A. disdain B. love C. disgrace D. admonition

From the words lettered A – D choose the word which best completes each of the following sentences.

7. Without _____ I will not accept the admission.
A. accommodation B. accomodation C. accomodation D. acommodation

8. Bode and Seyi are very selfish, they care only about _____
 A. each other B. one another C. themselves D. them.
9. The threat that he would expelled from school if he failed his examination again _____ him into seriousness
 A. coaxed B. lured C. incensed D. jolted
10. It is really a _____, the more you look, the less you see.
 A. metaphor B. hyperbole C. paradox D. miracle
11. Bunmi should not have taken offence at Emeka's _____ comments.
 A. innocuous B. ludicrous C. ridiculous D. notorious
12. I'd give up smoking, if I _____ you.
 A. am B. were C. was D. are
13. I heard the news _____ the radio.
 A. from B. by C. on D. through

INSTRUCTION: After each of the sentences below, a list of possible interpretations of all or part of the sentence is given. Choose the interpretation that you consider most appropriate for each sentence.

14. No one understands better than a man who participates in a project that the proof of the pudding is in the eating.
 A. To enjoy the taste of the pudding one must eat it after hand work.
 B. only the man with actual experience of a thing understands what it entails
 C. people who have never eaten a pudding cannot say how it tastes
 D. Reliance on one's effort is the surest way to achieve anything.
15. When a brother has spoken the bitter truth to another, the latter often wears a long face
 A. looks serious or dismal B. wears a grotesque mask
 C. decided to keep away from his presence D. Quarrels with him.
16. If you don't know him well enough, you would think he couldn't say 'boo to a goose'
 A. would run away whenever he said 'boo' to a goose B. was very timid
 C. didn't know how to say 'boo' to a goose D. Was too good to drive away a goose.
17. The business man near our house is so resourceful that all his grain to his mill.
 A. everybody who comes to his mill is disappointed B. he wastes everything
 C. everything that comes to his mill is lost. D. he utilizes everything to bring profit.
18. The famous dancer brought down the house by her exquisite performance.
 A. cause the building to fall B. brought the spectators to the ground floor
 C. closed down dancing hall D. won great applause
19. The Lincoln used to be an object of ridicule to his friends, but they soon realized that he was a rough diamond.
 A. a person on rough as unrefined diamond B. a rough but wealthy man
 C. a man of great worth, though of unattractive exterior D. a person with rough diamond in him.

INSTRUCTION: From the words lettered A – D, choose the word or group of words that is nearest in meaning to the underlined expression as it is used in the sentence.

20. While we were waiting for the examination results to be posted. I suffered a lot from the suspense.
A. fear B. doubt C. uncertainty D. delay
21. John's master praised him for being diligent in his duties.
A. sober B. careful C. consistent D. industrious
22. We had to control Uyi or he would have fought Abu over those words.
A. Advise B. Restrain C. Command D. Forbid
23. Some people believe that black cats are omens of bad luck.
A. warnings B. signs C. prophecies D. promises
24. A monkey can imitate most of a man's actions
A. perform B. mock C. learn D. ape
25. The villagers were filled with wonder when they said their first television
A. shock B. disbelief C. amazement D. fear

Read the passage below and answer questions 26-30 that follow.

According to the controversial sunspot theory, great storms on the surface of the Sun hurl streams of solar particles into space and eventually into the atmosphere of our planet, causing shifts in weather on the Earth and interference with radio and television communications.

A typical sunspot consists of a dark central umbra, a word derived from the Latin word for shadow which is surrounded by a lighter penumbra of light and dark threads extending out from the centre like the spokes of a wheel. Actually the sunspots are cooler than the rest of the photospheres, which may account for their apparently darker colour.

Typically, the temperature in a sunspot umbra is 4000K, whereas the temperature in a penumbra registers 5500K, and the granules outside the spot are 6000K.

Sunspots range in size from tiny grains to complex structures with areas stretching for billions of square miles. About 5 percent of all sunspots are large enough so that they can be seen from Earth without instruments; consequently, observations of sunspots have been recorded for thousands of years. They have been observed in arrangements of one to more than one hundred spots, but they tend to occur in pairs. There is also a marked tendency for the two spots of a pair to have opposite magnetic polarities. Furthermore, the strength of the magnetic field associated with any given sunspot is closely related to the spots size.

Sunspots have also been observed to occur in cycles over a period of eleven years. At the beginning of a cycle, the storms occur between 20 and 40 degrees north and south of the equator on the sun. As the cycle continues, some of the storms move closer to the equator. As the cycle diminishes, the number of sunspots decreases to a minimum, and they cluster between 5 and 15 degrees north and south latitude.

Although there is no theory that completely explains the nature and function of sunspots, several models show scientists' attempts to relate the phenomenon to magnetic field lines along the lines of longitude from the north and south poles of the sun.

26. Why are solar particles hurled into space?
A. Undetermined causes on Earth. B. Disturbance of wind on the Sun
C. Small rivers on the surface of the Sun D. Changes in the Earth's atmosphere.
27. How can we describe the effect of matter from the Sun that enters the Earth's atmosphere?
A. It causes volcanic eruptions on the surface of the Earth B. It affects changes in the weather patterns on Earth. C. It results in shadows across the Earth's surface. D. It produces higher temperatures on the Earth.
28. How would you describe most sunspots?
A. A shadow encircled by bright and dark lines extending out like spokes in a wheel
B. A bright wheel with a dark shadow that covers part of the spokes that extend out.
C. A wheel with alternating spokes of dark shadows and bright spaces in between.
D. A spoke of a wheel with a bright trail partially covered by a dark shadow.
29. What does the author mean by "Actually, the sunspots are cooler than the rest of the photosphere, which may account for their apparently darker colour" ?
A. Neither sunspots nor the photosphere is hot B. Sunspots in the photosphere do not have any colour
C. The colour of sunspots could be affected by their temperature D. The size of a sunspot affects its temperature.
30. The Sunspot theory is
A. not very important B. widely accepted C. subject to debate D. relatively new.

GENERAL PAPER (2008)

INSTRUCTION: From the work lettered A-D choose the appropriate answer.

- Which of the following waves is both mechanical and transverse?
A. X-ray B. Water-wave C. Sound wave D. Radio wave
- Land and sea breezes may be explained in terms of differential in
A. Salient heat of fusion B. Specific latent heat of vaporization
C. Latent heat of vaporization D. Specific heat capacities

3. PQ is a uniform metre rule pivoted at 35.0cm mark. A mass of 50g is then hung at the 15.0cm mark such that the rule balances horizontally, calculate the mass of the metre rule.
A. 55.0g B. 66.7g C. 75.0g D. 77.7g
4. Which one of the following colour is most likely to produce a photo-electron with the highest kinetic energy. A. Red B. Yellow C. Blue D. Green
5. Which of the following radiations arrangement are in their ascending order of frequency?
A. γ -rays, x-rays, radio waves B. Radio waves, visible light, x-rays
C. γ -rays, radio waves, x-rays D. Visible light, x-rays, radio waves
6. If a broadcasting station sends out waves of wavelength 400m, on what frequency is the station operating? (Velocity of wave = $3.0 \times 10^8 \text{ ms}^{-1}$).
A. $7.5 \times 10^5 \text{ Hz}$ B. $7.5 \times 10^6 \text{ Hz}$ C. $1.0 \times 10^6 \text{ Hz}$ D. $1.0 \times 10^5 \text{ Hz}$
7. The gravitational force on a mass of 1kg at the earth's surface is 10N. Calculate the gravitational force on a satellite of mass 100kg in a circular orbit of radius 2R from the centre of the earth. [R = radius of the earth] A. 250N B. 220N C. 120N D. 110N
8. Which of the following experiments confirms the existence of quantized energy levels in an atom?
A. Rutherford's experiment B. Frank-Hertz experiment C. Einstein's experiment
D. Lenard's experiment
9. The balanced lengths of a certain cell of unknown emf E' and Daniel cell of emf, 1.08v are 80.0cm and 48.0cm respectively on a potentiometer circuit. Calculate the unknown emf E'
A. 1.5v B. 1.8v C. 2.0v D. 2.5v
10. The emission of electrons due to the application of heat is known as
A. High field emission B. Cold cathode emission C. Thermionic emission
D. Secondary emission
11. Doping a semi-conductor with an impurity
A. Decreases the conductivity B. Increases the resistivity
C. Increases the conductivity D. Has no effect
12. Which of the following serves as a moderator in a nuclear reactor?
A. Cadmium rods B. Boron rods C. Aluminium rods D. Heavy water.
13. Which of the following statements is/are true of liquids and gases?
I. Both are fluids II. Their particles are in constant motion
III. Both are compressible
IV. Boyle's law is applicable to both
A. I and II only B. II only C. I and III only D. IV only
14. Ethanoic acid is found in
A. Sour milk B. Sour palm wine C. Lemons D. Crude oil

15. Graphite occurs naturally as
 A. Dolomite B. Limonite C. Plumbago D. Chalcago
16. Carbon (II) oxide is poisonous to many animals because
 A. It combines with the oxygen from the air B. It combines reversibly with haemoglobin
 C. It combines irreversibly with haemoglobin D. It forms oxalic acid in the lungs
17. The purest form of silica is
 A. Flint B. Opal C. Quartz D. $ZnSiO_3$
18. Plaster of Paris (P.O.P) used for making casts in hospitals is
 A $CaSO_4 \cdot 2 H_2O$ B. $CaSO_4 \cdot H_2O$ C. $CaSO_4 \cdot 3 H_2O$ D. $CaSO_4 \cdot 4 H_2O$
19. Which of the following compounds of the tin is a strong reducing agent?
 A. $SnCl_2$ B. $SnCl_4$ C. SnO_2 D. SnH_4
20. Which of the following will not form complexes with zinc?
 A. Ammonia B. Trioxonitrate (V) ions C. Cyanide ions D. Halide ions
21. Methane and paraffin wax are very similar in many ways. The main reason why they differ chemically is that
 A. One is a gas and one is a solid B. On complete combustion their products differ
 C. One is a Hydrocarbon and one is a carbohydrate D. They come from different sources
22. A body A moves northwards with a velocity of 5kms^{-1} , and another body B moves in a direction $N 60^\circ E$ with a velocity of 4kms^{-1} . Calculate the magnitude of the velocity of A relative to B.
 A 2.5 kms^{-1} B. 3.5 kms^{-1} C. 4.6 kms^{-1} D. 8.5 kms^{-1}
23. A metal sphere falling freely in a long measuring cylinder containing a liquid is under the influence of:
 A. Conservative forces only B. Non-conservative forces only C. Both conservative and non-conservative forces D. Neither a conservative nor non-conservative force fields.
24. A body is projected with initial velocity of 60ms^{-1} through an inclination of 30° to the horizontal, calculate the magnitude of the resultant velocity after 2 seconds [$g = 10 \text{ ms}^{-2}$]
 A. 37ms^{-1} B. $10\sqrt{5} \text{ ms}^{-1}$ C. 20 ms^{-1} D. $10\sqrt{37} \text{ ms}^{-1}$
25. A binary operation \cdot is defined on R , the set of real numbers by $x \cdot y = \sqrt{xy}$ for all $x, y \in R$. If $x \cdot 2) \cdot = (8$
 6, find x A. 2 B. 4 C. 9 D. 10
26. Find the remainder when the polynomial $f(x) = 2x^2 - 5x - 5$ is divided by $(2x + 1)$
 A. -7 B. $-11/2$ C. $-9/2$ D. -2
27. The common ratio of the exponential sequence (G.P) $\log x, \log x^2, \log x^4, \dots$ is
 A. x B. 2 C. $\log x$ D. $\log 2$
28. Solve the equation $\log_2(x - 1) + \log_2(x + 2) = 2$
 A. $x = 0$, or 1 B. $x = 1$ or 2 C. $x = 2$ or -3 D. $x = \frac{1}{2}$ or 0
29. Express $2 \cos(60^\circ + \theta)$ in terms of $\cos \theta$ and $\sin \theta$
 A. $\cos \theta + \sqrt{3} \sin \theta$ B. $\sqrt{3} \cos \theta - \sin \theta$ C. $\cos \theta - \sqrt{3} \sin \theta$ D. $\sqrt{3} \cos \theta + \sin \theta$

30. The minimum point on the curve $y = x^2 - 6x + 5$ is at
 A. (1,5) B. (-3, -4) C. (3, -4) D. (-3, -4)
31. Which of the values of the variables x ,
 (i) $x = 0$, (ii) $x = -3$ (iii) $x = 9$, Satisfy the inequalities
 $0 < \frac{x + 3}{x - 1} \leq 2$?
 A. (i), (ii), (iii) B. (ii), (iii) only C. (iii) only D. (ii) only
32. Three numbers x , y and z are connected by the relationship
 $y = \frac{4x + 1}{9}$ and $z = \frac{4y + 1}{9}$
 If $x = 99$ find z
 A. $6\frac{1}{3}$ B. 20 C. 21 D. $176\frac{4}{9}$
33. Find the missing numerator
 $\frac{5}{x+1} - \frac{3}{1-x} + \frac{7x+1}{x^2-1} = \frac{?}{x+1}$
 A. -1 B. $x-1$ C. $3(1-5^x)$ D. 1
34. Solve for x and y
 $\begin{pmatrix} 1 & 1 \\ 3 & y \end{pmatrix} \begin{pmatrix} x \\ 1 \end{pmatrix} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$
 A. $x = 3, y = 8$ B. $x = 8, y = 3$ C. $x = 3, y = -8$ D. $x = 8, y = -3$
35. Evaluate $\int^1 (2x + 1)^2 dx$
 A. $3\frac{2}{3}$ B. 4 C. $4\frac{1}{3}$ D. $4\frac{2}{3}$
36. Solve the following inequality $(x - 3)(x - 4) \leq 0$
 A. $3 \leq x \leq 4$ B. $3 < x < 4$ C. $3 \leq x < 4$ D. $3 < x \leq 4$
37. What is the total surface area of a closed cylinder of height 10cm and diameter 7cm?
 (Take $\pi = \frac{22}{7}$)
 A. 77cm^2 B. 227cm^2 C. 297cm^2 D. 274cm^2
38. Calculate, correct to one decimal place, the standard deviation of the number s -1, 5, 0, 2 and 9.
 A. 7.2 B. 6.6 C. 3.6 D. 3.2
39. The probability of an event P is $\frac{3}{4}$ while that of another event Q is $\frac{1}{6}$, if the probability of both P and Q is $\frac{1}{12}$. What is the probability of either P or Q ?
 A. $\frac{1}{96}$ B. $\frac{1}{8}$ C. $\frac{5}{6}$ D. $\frac{11}{12}$
40. How many moles of oxygen are produced when 20 moles decomposed?
 A. 5 B. 10 C. 15 D. 20

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIVERSITIES MATRICULATION EXAMINATION SCREENING
TUESDAY, AUGUST 25th 2009. 2PM

Time allowed: 1 hour 10minutes

INSTRUCTIONS

Read the following instructions carefully:

- **Use *HB pencil*** to shade your answers. Ensure that any shading in error is thoroughly erased.
- Candidates should write ***the Question Paper Option*** given to them in the appropriate space in the *Answer Sheet*.
- Write your ***JAMB Registration numbers on the Question Paper*** in the space provided at the top of Page 1.
- **Attempt all questions.**
- The use of calculators and /or similar electronic devices is ***NOT*** allowed

Read this passage carefully and then answer the questions that follow, by picking the right option lettered A - D, which best answer the questions

One day, Alan, a friend of mine, who likes country life, was fishing in a river, when he caught a trout, he tried to push the fish in but slipped off the hook, flew over his head and landed in a field behind him.

Alan put down his rod, went through the gate and started searching for his trout. Some people, obviously from there were having a picnic in the field. One of the men shouted "what on earth are you doing"? Thinking that it was a question because they could see how he was dressed, Alan replied "fishing", 'Don't be silly'; the fish don't live in fields! He turned to his friends, laughing, thinking that he had made a good joke. 'Oh but they do' said Alan. They jump out of the river to look for flies and I catch them with my hands. At that moment he found his trout in the grass and picked it up and showed it to the picnickers. He put it in his basket and bent down as if he was hunting for another one. The picnickers no longer laughing, spent the rest of the day searching the fields.

1. Why did the fish land in the field? A. It had wings B. It was a flying fish C. It was looking for food D. It fell off the hook.
2. The picnickers were-A. farmers B. from the nearby village C. tourists D. people from the city .
3. Where was Alan looking for his fish? A. In the grass B. Down in the river C. In front of the gate D. In his basket
4. Alan made the picnickers believe that fish jump out of the river to look for flies by
A. telling a story B. finding his trout and showing it to them C. picking up a fish and looking for more D. taking them down to the river
5. He laughs best who laughs last (Proverb). It is true for this story because A. the picnickers were enjoying themselves B. finally he found his fish C. Alan played a good trick on the picnickers D. fishing is a pastime

From the words lettered A-D choose the word or group of words that is opposite in meaning to the underlined word or group of words.

6. While Damisah denounced the principal's approach to the issue of discipline in the school, Osagie the approach. A. renounced B. landed C. condemned D. refused
7. The woman croons the word of her prayer every morning but her husband his
A. murmurs B. prattles C. shouts D. counts

From the options A - D provided, choose the one nearest in meaning to the underlined word(s).

8. Are you sure the boy is indisposed now?
A. Irrational B. Erratic C. Disposed D. Unhealthy.
9. The clergy don't pay much attention to terrestrial phenomena.
A. celestial B. worldly C. transparent D. especial
10. Moses was a master of the game: his most victorious battles were all carefully planned days before they took place. A. arranged B. mapped C. schemed D. worked out.
11. One of the most enormous of all monsters is the dinosaur.
A. little B. small C. tiny D. huge.

From the words lettered A-D choose the interpretation that gives the correct meaning of the idiom in the sentence or phrase.

12. In order to meet up with the deadline, the labourer decided "to fire on all cylinders". This means that the labourer. A. Shot at all the available cylinders B. Threw all the cylinders into fire C. Got fed up with the task D. Used all his energy to do the job.
13. When Mary was asked to state her case, she began to beat about the bush. This means that Mary.
A. Stated her case very vividly B. Went through a bushy part C. Felt ashamed to say anything D. Failed to deal with real issue.
14. Since Madam Abeki's promotion, she queens it over everyone else in the office. This means that Madam Abeki ..
A. Behaves in a superior way towards others B. Is like a queen C. Currently looks very pretty D. No longer performs her official duties

In the following sentences, choose from the options A— D that best completes the sentences

15. Suzan was given A. a piece of long yellow and blue spotted napkin B. a long napkin piece of yellow and blue spotted. C. a long piece of yellow and blue spotted napkin D. a yellow and blue spotted long piece of cloth
16. That woman's is always beating her
A. brute of a husband B. husband's brute C. brute's husband D. husband brute
17. The manager could not attend the meeting, so he asked Mr. Obi to for him.
A. stand in B. stand out C. stand down D. stand up
18. Ada was unable to finish her assignment the previous day, so she gave trying.

- A. Up B. down C. out D. in
19. Because Gnome's dress was too long, the dressmaker said that she would the hem a few inches.
A. takeoff B. take up C. take down D. take out.
20. The team were so active in the first few minutes into the game that they were before the end of the first half. A. played on B. played off C. played out D. played up.
21. Audu called his uncle, but he had already left. A. in B. on C. for D. off
22. I saw a ₦20 note at my feet. A. laying B. lying C. laid D. lain
23. Trial and error in success. A. resulting B. result C. resulted D. results
24. The boy as well as his sister going A. are B. were C. is D. was
25. Everybody at home staying out at night. A. enjoys B. enjoyed C. enjoy D. enjoying

Choose from the options lettered A - D the correct reported version of the direct speech.

26. Emeka said, "I do not understands this rule" can be reported as.
A. Emeka said, I don't understand this rule B. Emeka told me, I do not understand this rule C. Emeka said that he did not understand that rule D. Emeka said that he did not know that rule.
27. "I will dance tomorrow" can be reported as. A. he said that he would dance the next day
B. he says he would dance tomorrow C. he said that he would dance tomorrow
D. he would dance the day after today.
28. Rachael said to her mother, "you are not in the mood today" can be reported as follows.
A. Rachael told her mother that the later was not in the mood that day B. Rachael told her mother that she was not in the mood today C. she told her mother that she was not in the mood D. she said to her mother, you are not in the mood today.
29. Sam exclaimed, "goodness gracious! I don't believe it". The reported version is
A. Sam said good gracious, he does not believe it B. Sam exclaimed in surprise that he did not believe it C. Sam said, that he is shock that I did not believe it. D. Sam was shocked that he did not believe me.
30. John said, "when did you return?" Can be reported as A. John asked me. when I returned B. John asked me when I had returned C. John asked, when will you return D. John said, when would you return?

GENERAL PAPER (2009)

INSTRUCTION: From the words lettered A-D choose the appropriate answer.

1. If α and β are the roots of the quadratic equation $x^2 - 10x + 2 = 0$, find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$

A. 26 B. 24 C. 3/2 D. 3

2. A bag contains three red and five white balls of equal sizes. Two balls are picked at random one after the other without replacement. What is the probability that both balls are of the same colour?
 A. $\frac{13}{32}$ B. $\frac{3}{28}$ C. $\frac{5}{14}$ D. $\frac{13}{28}$
3. Two cards are picked at random from a pack of 52 playing cards, one at a time with replacement. What is the probability that the two cards are both spades and both hearts.
 A. $\frac{8}{169}$ B. $\frac{1}{16}$ C. $\frac{1}{8}$ D. $\frac{1}{32}$
4. Rationalize $\frac{3}{9-\sqrt{80}}$
 A. $3(9 + \sqrt{80})$ B. $\frac{3}{161}(9 - \sqrt{80})$ C. $3(9 - \sqrt{80})$ D. $\frac{3}{161}(9 + \sqrt{80})$
5. Simplify $\frac{\sqrt{5}}{\sqrt{5}-1} + \frac{\sqrt{5}}{\sqrt{5}-1}$
 A. $\frac{2}{5}$ B. $2\frac{1}{2}$ C. $1\frac{2}{3}$ D. $\frac{3}{5}$
6. A binary operation $*$ is defined on R, the set of real numbers by $x*y = xy + x + y$
 A. 20 B. 31 C. 42 D. 441
7. Simplify $\frac{3-2\sqrt{2}}{3+2\sqrt{2}}$
 A. 1 B. $17-12\sqrt{2}$ C. $17+12\sqrt{2}$ D. $\frac{17-12\sqrt{2}}{17}$
8. The numerator of a fraction is 5 less than the denominator. If 6 is added to the numerator and 4 to the denominator the fraction is doubled. What is the fraction?
 A. $\frac{2}{7}$ B. $\frac{5}{8}$ C. $\frac{3}{8}$ D. $-\frac{1}{4}$
9. The total of four numbers is 1214_{five} . What is their average, expressed in base five?
 A. 303.10 B. 242.4 C. 141 D. 114
10. In how many ways can a referee choose three footballers out of twelve footballers to represent a school competition. A. 220 B. 1320 C. 6 D. 720
11. The n^{th} term of the sequence 2, 6, 18, 54, is 4374 Find the number of n
 A. 9 B. 8 C. 7 D. 6
12. In a class of 50 students, 30 speak Edo while 19 speak Yoruba and 7 students speak both languages. How many students neither of the languages?
 A. 11 B. 8 C. 7 D. 6

13. The sum of digits of a two digit number is 13 and the units is 3 less than the tens digit.
What is the number? A. 47 B. 74 C. 58 D. 85
14. The quadratic equation whose roots are $(1 - \sqrt{13})$ and $(1 + \sqrt{13})$
A. $x^2 - 2x - 12 = 0$ B. $x^2 + 2x - 12 = 0$ C. $x^2 - 2x + 12 = 0$ D. $x^2 + 2x + 12 = 0$
15. $\frac{1}{x-3} - \frac{3(x-1)}{x^2-9}$
A. $\frac{x-1}{x-3}$ B. $\frac{2(3-x)}{x^2-9}$ C. $\frac{x-1}{x+3}$ D. $\frac{4x}{x^2-9}$
16. A labile salt dissolved in water can be separated by
A. evaporation B. crystallization C. filtration D. steam distillation.
17. The atomicity of ozone is A. 1 B. 2 C. 3 D. 4
18. The nucleus of an atom is composed of
A. positively charged protons
B. negatively charged electrons C. neutrons D. protons and neutrons
19. The following are metals except A. silicon B. tin C. lead D. chromium
20. Which of the following statements is true?
A. All ammonium salts are soluble in water B. All trioxocarbonate (IV) salts are insoluble in water
C. Some trioxonitrate (V) salts are soluble in water D. a and c above
21. The half life of an element is 12hrs. If the initial mass is 50g. What mass will be left after 2 days? A. 3.125g B. 6.25g C. 12.5g D. 25g
22. Water was added to sodium dioxonitrate (V) salt in a test tube and the test tube became cold.
The reaction is A. reversible B. exothermic C. endothermic D. explosive
23. Which of the following is an alloy of aluminium
A. brass B. bronze C. gelena D. magnalium
24. Which of the following is an alkyne A. C_5H_8 B. $C_{10}H_{21}$ C. C_8H_{16} D. C_5H_{12}
25. Pick out the odd compound A. Toluene B. Phenol C. ethanol D. benzene
26. Which of the following statements is correct
A. The randomness of molecules is less in a liquid than in a solid B. Diffusion does not occur in solids at all temperatures
C. The intermolecular forces are weaker in liquids than in solids D. The pressure of a gas is the combined force with which the gas molecules collide with one another in a container
27. Which of the following zones is NOT part of a non-luminous Bunsen flame?
A. Blue zone B. Unburnt C. Bright yellow luminous zone D. non-luminous zone
28. Which of the following is a secondary air pollutant? A. particulate dust B. Sulphur (IV) oxide C. Ozone D. Chlorofluorocarbons

29. Ammonia can be obtained from diammonium tetraoxosulphate (VI) by heating it with
 A. dilute HCl B. cone. H₂SO₄ C. CuSO₄ D. NaOH
30. Which of the following compounds is soapless detergent?
 A. C₁₂H₂₅OSO₃Na B. C₁₇H₂₅COONa C. C₆H₅OH D. C₄H₉COOC₂H₅
31. A motor-car is uniformly retarded and brought to rest from a speed of 90km/h in 10s. Find its acceleration. A. 25 ms⁻¹ B. 2.5 ms⁻² C. -2.5 ms⁻² D. -2.5 ms⁻¹
32. Determine the quantity of heat in joules given out when a piece of iron of mass 40g and specific heat capacity 460J/kg °C cools from 70°C to 40°C
 A. 552J B. 736J C. 1288J D. 368.1
33. Which of the following is not a characteristic of the image formed in a plane mirror
 A. The same size as the object B. As far behind the mirror as the object is in front
 C. Real D. Laterally inverted.
34. The angle between a plane mirror and an incident ray is 35°. Find the angle of reflection.
 A. 55° B. 50° C. 45° D. 70°
35. Which of the following properties of radiations from radioactive substances is FALSE
 A. Gamma rays are deflected by a magnetic field B. Alpha particle is a helium nucleus
 C. Beta rays are streams of high energy electrons D. Beta rays are strongly deflected by a magnetic field
36. A machine with a velocity ratio of 6 requires 800.1 J of work to raise a load of 640N through a vertical distance of 1m. Find the efficiency of the machine
 A. 20% B. 64% C. 80% D. 75%
37. Which of the following is NOT True about mercury as a thermometric liquid
 A. It does not wet glass B. It is opaque and easily seen C. It can be used for extra low temperature down to -200°C D. It is a good conductor of heat and responds rapidly to changes in temperature.
38. A stone whirled at the end of rope 35cm long, makes 15 complete revolutions in 4 seconds. Find the angular velocity in radians per second.
 A. 23.6rad.s⁻¹ B. 31.4 rad.s⁻¹ C. 824.7 rad.s D. 942.0 rad.s⁻¹
39. An object of mass 7kg is moving at a constant velocity of 20ms⁻¹. Determine the kinetic energy. A. 2.2KJ B. 140.0KJ C. 1.4KJ D. 562.5J
40. Find the cost of operating an electric appliance for 10 hours at 30 kobo per kwh if it takes 3A when connected to a 220V supply A. NO.66 B. N1.32 C. N1.98 D. N2.62
41. Which of the following is not a scale quantity? A. Density B. Mass C. Speed D. Weight
42. Find the resultant of two forces 6N and 5N which are inclined to each other at 30".
 A. 12.2N B. 8.7N C. 10.6 D. 9.5N
43. Which of the following is NOT property of waves?
 A. Refraction B. Polarization C. Ray box D. Interference

44. An object placed 18cm in front of a convex mirror produced an image 6cm behind the mirror. Find the focal length of the mirror. A. 9.0cm B. 7.5cm C. -6.5cm D. -9.0cm
45. A battery of e.m.f. 12 volts and internal resistance 1.2 ohms is connected to an external resistance of 4 ohms. Find the current flowing in the circuit A. 2.3A B. 2.7A C. 3.0A D. 2.5A

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIVERSITIES MATRICULATION SCREENING
2010

Time allowed: 1hr 15mins

INSTRUCTIONS

Read the following instructions carefully:

1. Use **HB pencil** to shade your answers. Ensure that any shading in error is thoroughly erased.
2. Candidates should indicate **the Question Paper Type** given to them in the appropriate space in the Answer sheet.
3. Write your JAMB Registration numbers on the Question Paper in the space provided at the top of page 1.
4. **Attempt all questions.**
5. The use of calculators and/or similar electronic devices is **NOT** allowed.

SECTION A: ENGLISH

Read the passage below and answer questions 1 —5 that follow.

The police definitely have been out-gunned and overwhelmed by the criminals. The kidnappers who started operating in the oil producing Niger Delta then claimed to be using the crime as an instrument of protest against the neglect of their area in terms of development by successive governments. However, since normalcy was restored to the area through the amnesty programme initiated by the Federal Government, cases of kidnapping have subsided in the Niger Delta.

The South East has now taken over as the headquarters of kidnapping and armed robbery and yet the police and other security agencies appear helpless. There is failure of intelligence. There is failure of crime prevention and crime bursting tactics. People now live in fear of criminals. The criminals operate with impunity. In some states of the South East, robbers have become the alternative government.

The demand on the police to check this ugly trend may appear as a natural reaction to this development.

However, the present crisis is beyond the capacity of our ill-equipped, ill-motivated and under-staffed police. The normal facilities which usually make a police the real law enforcement agency are lacking in our country. And this is apart from the fact that the salaries and allowances of the police officers are nothing to write home about. Yet, we expect the policeman to confront the dare-devil kidnappers and armed robbers. The policeman who lacks good accommodation, who pays for his uniform from his pocket and contributes alongside his colleagues to get the station running, has the onerous and unenviable challenge of engaging the criminals and driving them out of town!

1. From the passage, the writer...
 - A. is happy with the performance of the police in spite of their problems.
 - B. is justifying why the police have not been very effective in crime control.

- C. thinks that there is no solution to the wave of crime
 D. is happy with the effort of government in crime control
2. Reasons listed by the writer for the inability of the police to control crime include the following except.....
 A. lack of proper education B. lack of needed equipment C. poor motivation D. under-staffing
3. From the passage, the major crime of interest to the writer most is...
 A. assassination B. kidnapping C. pick-pocketing D. corruption
4. "Criminals operate with impunity", means...
 A. criminals operate with support by government B. criminals operate with the help of the police
 C. criminals operate without fear D. criminals operate without being punished
5. An onerous challenge is.....
 A. a difficult one B. an easy one C. a frustrating one D. an interesting one

INSTRUCTION: After each of the sentences below, a list of possible interpretations of all or part of the sentence is given. **Choose the interpretation that you consider most appropriate for each sentence.**

6. They accused the government of knee-jerk response to issues that affect the masses. This means that...
 A. the government responded quickly to issues affecting the masses
 B. the government did not respond to issues affecting the masses
 C. the government responded to issues affecting the masses but without thinking properly
 D. the government was slow in responding to issues affecting the masses
7. The lecture had me on the edge of my scat. This means that...
 A. the lecture was interesting and I was fully attentive
 B. the lecture was very boring and I felt like leaving
 C. the lecture raised many questions
 D. the lecture was very critical of government
8. If your dad finds out, you will catch it. This means that...
 A. you will get a present if your dad finds out
 B. you will be punished if your dad finds out
 C. your dad will be angry if he finds out
 D. your dad will be amused if he finds out
9. I listened in as the lecturer discussed my matter with the Dean. This means that...
 A. I listened attentively to the discussion B. I listened without my lecturer and the Dean knowing
 C. I listened to the discussion while sitting down D. I listened to the discussion while standing
10. Amanda has always been able to twist her father around her little finger. This means that...
 A. Amanda is always able to persuade her father B. Amanda is always able to deceive her father
 C. Amanda is always able to fight her father D. Amanda is always arguing with her father

11. She turned down our invitation for the party. This means that....
 A. she accepted our invitation for the party B. she rejected our invitation for the party
 C. she quarrelled over our invitation for the party D. she appreciated our invitation for the party
12. I am going back to office because I have a lot on my plate. This means that...
 A. I have a lot of work to do in my office
 B. I have a lot of food to eat in my office
 C. I need to give out the food in my office so that it doesn't go bad
 D. I have people waiting for me in my office
13. In spite of his mother's efforts, Osho has remained the black sheep of his family. This means that.
 A. Osho is one supporting the family financially
 B. Osho is the one bringing shame to his family
 C. Osho is the one bringing success to his family
 D. Osho is the most humorous person in his family
14. I was taken aback by his actions. This means that...
 A. his actions impressed me
 B. his actions got me angry
 C. his actions surprised me
 D. his actions reminded me of the past

INSTRUCTION: Choose the word or group of words that is **nearest in meaning** to the underlined expression as it is used in the sentence.

15. Steps are being taken to ameliorate the transport situation on campus.
 A. improve B. worsen C. repair D. fix
16. The Vice Chancellor thanked him for his invaluable contributions to the growth of the school.
 A. useless B. very useful C. unacceptable D. unexpected
17. Her story sounded plausible.
 A. unacceptable B. reasonable C. incredible D. unreasonable
18. His message in the assembly hall was unequivocal.
 A. poor B. stimulating C. clear and without doubts D. difficult to understand
19. You must be importunate to get assistance from that lecturer.
 A. be unlucky B. be very lucky C. be pestering D. give bribe
20. The use of 'book of tables' is becoming obsolete in Mathematics examinations.
 A. out of date B. scarce C. unnecessary D. real

INSTRUCTION: Choose the word or group of words that is **opposite in meaning** to the underlined expression as it is used in the sentence.

21. He intentionally hid the documents from his wife
A. carelessly B. willingly C. unknowingly D. foolishly
22. Natural causes of death are easy to understand. ,
A. supernatural B. false C. artificial D. modern
23. He is one of the most talkative students in his class.
A. humorous B. sober C. taciturn D. aggressive
24. The whole of the city has become waterlogged
A. dry B. sandy C. flooded D. muddy
25. His comments at the event were remarkable
A. critical B. useless C. noteworthy D. commendable

INSTRUCTION: Choose the option which best completes each of the following sentences.

26. ----- ride a motorbike but he also drives a car.
A. He not only does B. Not only does he C. He only does not D. Not only he does
27. In this e-mail there ----- good news about your father.
A. is some B. are C. is a D. are some
28. Don't let him bully you; you must stand up ----- him!
A. for B. before C. to D. against
29. It was a long time before his surprise wore -----
A. out B. off C. through D. down
30. In that ----- accident all passengers were injured.
A. ghastly B. fatal C. reckless D. dangerous

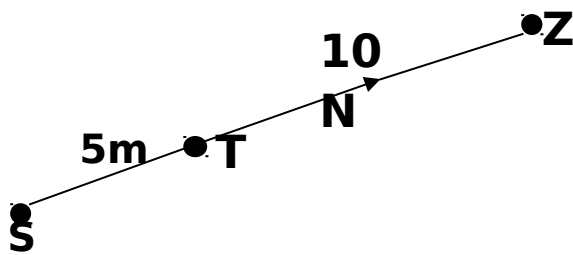
SECTION B:

GENERAL PAPER (PHYSICAL SCIENCES & ENGINEERING)

31. If 12 and 9 are the atomic numbers of elements P and Q respectively, the interatomic bond between these elements is
- A. co-ordinate B. neutral C. covalent D. ionic
32. All the following statements are false about sodium chloride in the solid state except....
- A. it exists as aggregate of ions B. it conducts electric circuit
C. It exists as discrete molecules D. Its ions are linked by metallic bonds
33. The abnormally high boiling point of water is due to
- A. its high molecular mass B. the presence of metallic bond
C. the presence of hydrogen bonds D. the presence of covalent bonds
34. The rate of diffusion of a gas R is inversely proportional to the square root of its density. This statement is synonymous with

- A. composition of mass B. Graham's law of diffusion C. General gas law D. Gay Lussac's law
35. The pressure of a given mass of gas is 30mmHg. What will be the pressure in Newton/m² ?
 A. 3000 Nm⁻² B. 3999.7Nm⁻² C. 309.37Nm⁻² D. 2984Nm⁻²
36. Calculate the volume of oxygen required to burn completely 20cm³ of carbon (II) oxide.
 A. 10cm³ B. 20cm³ C. 30cm³ D. 40cm³
37. One mole of a substance contains the
 A. atomic number of particles B. Faraday's number of particles C. Avogadro's number of particles
 D. quantum number of particles
38. $\text{Zn} + \text{Cu}^{2+} \longrightarrow \text{Zn}^{2+} + \text{Cu}$
- From the reaction above, it can be deduced that....**
- A. Zn is reduced B. Zn is the oxidizing agent C. Cu²⁺ loses electrons D. Cu²⁺ is the oxidizing agent
39. These are factors affecting rate of chemical reaction except...
 A. surface area B. catalyst C. nature of the reactants D. activation energy
40. The units of rate of chemical reaction is
 A. mol dm⁻³s⁻¹ B. mol⁻¹s⁻¹ C. mol⁻¹ D. smol⁻¹
41. Which of the following mixtures will produce gas?
 A. CO₂ and H₂ B. CO₂ and N₂ C. CO and H₂ D. CO and N₂
42. What is the main use of the crucible in the laboratory?
 A. Filtering precipitates B. Igniting precipitates C. Drying salts D. Condensing vapour
43. Methane, ethane, propane, butane and pentane are the five simplest
 A. alkenes B. alkynes C. alkanes D. olefins
44. When a system at equilibrium is disturbed, the equilibrium adjusts itself in such a way as to cancel out or annul the effect. This is.....
 A. the law of chemical equilibrium B. Le Chatelier's principle C. law of enthalpy D. law of entrophy
45. The reaction between KOH and NO₂ produces water and....
 A. KNO₃ R. KNO₃ C. HNO₃ P. KNO₃ and KNO₂
46. Which of these methods is employed in the separation of hydrocarbons in petroleum?
 A. Catalytic cracking B. Polymerization C. Fractional distillation D. Hydrogenation
47. Points P and Q are respectively 24m north and 7m east of a point R. What is the bearing of Q from P to the nearest whole degree? A. 164° B. 16° C. 73° D. 103°
48. Factorize 35-2b-b².
 A. (7 + b)(5-b) B. (b + 7)(b-5) C. (7 + b) (5 + b) D. (35-2b)(b-I)
49. If 3log a + 5log a - 6log a = log 64, what is a? A. 4 B. 8 C. 16 D. 6
50. What value of k makes the expression x² - 8x + k = 0 a perfect square?
 A. 2 B. 4 C. 8 D. 16

51. A Headmaster contributes 7% of his income into a fund and his wife contributes 4% of her income. If the husband earns N5,500 per annum and the wife earns N4,000 per annum, find the sum of their annual contribution to the fund.
A. N 1,045 B. N605 C. N545 D. N490
52. The population of a village is 5846. Express this number to three significant figures
A.584 B.585 C. 5840 D.5850
53. Find the equation of a line with gradient -2 passing through the point (1,2).
A. $y = 4 - 2x$ B. $y = 4x + 2$ C. $y = 2x + 4$ D. $y = -2x - 2$
54. If v varies directly as the square of x and inversely as y , and if $v = 18$ when $x = 3$ and $y = 4$, find v when $x = 5$ and $y = 2$. ' A. 101 B. 100 C. 98 D. 90
55. Divide the expression $x^3 + 7x^2 - x^2$ by $-1 + x^2$.
A. $x^2 + 7x^2 - 7$ B. $-x^3 - 7x + 7$ C. $x - 7$ D. $x + 7$
56. The interior angle of a pentagon are 130° , 118° , 80° , 78° and x . Find the value of x .
A. 75° B. 108° C. 120° D. 134°
57. In a regular pentagon ABCDE, AC intersects BD at F. Calculate $\angle CBD$.
A. 108° B. 72° C. 60° D. 36°
58. A chord is 5cm from the centre of a circle of diameter 26cm. Find the length of the chord.
A. 35cm B. 30cm C. 24cm D. 14cm
59. A chord XY of a circle of radius 14cm subtends an angle of 60° at the centre. Find the length of arc XY.
A. $43/3$ cm B. $33/3$ cm C. $23/3$ cm D. $13/3$ cm
60. The locus of a point which is equidistant from two given fixed points is the....
A. perpendicular bisector of the straight line joining them B. parallel line to the straight line joining them
C. transverse to the straight line joining them D. angle bisector of 90° which the straight line makes with the horizontal
61. The magnitude of the resultant of two equal vectors, each of magnitude K units and acting at right angle to each other is..... A. K B. $K\sqrt{2}$ C. $\sqrt{2}k$ D. $2K$
62. An orange falls from a height of 20m. How long does it take to reach the ground?
A. 2.0 sec B. 0.5 sec C. 1 sec D. 4 sec
63. A piece of stone weighs 80g in air, 50g when completely immersed in water and 65g in liquid Y. What is the relative density of Y?
A. 0.2 B. 1.5 C. 0.5 D. 2.0
64. If $ST = 5$ m, the moment of the force of 10N about S in the diagram below is.....



- A. 50Nm B. 15Nm C. 5Nm D. 0
65. A ball is projected so as to attain maximum range. Determine the angle with which the ball must be projected. A. 15° B. 30° C. 60° D. 45°
66. A toy car of mass 8kg initially at rest is accelerated at a rate of 2ms^{-2} for 3 sees. The kinetic energy of the toy car is.... A. 144J B.288J C.48J D.96J
67. The two fixed points on a thermometer are 70cm apart. When the thermometer reads 63cm above the ice point, the temperature is.... A. 63°C B. 70°C C. 90°C D. 10°C
68. One advantage of alcohol over mercury as a thermometric fluid is that__
 A. it expands more uniformly than mercury B. it is a better conductor of heat than mercury
 C. it has a lower freezing point than mercury D. it has a lower specific heat capacity
69. A closed organ pipe and an open organ pipe emit notes of the same pitch. The ratio of the length of the air column in the closed pipe to that of the open pipe is.....
 A. 2:1 B. I: I C. 1:2 D. 1:4
70. The process by which protons are converted into helium atom with a tremendous release of energy is called... A. thermionic emission B. nuclear fission C. thermonuclear fission D. photoelectric emission

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIFIED TERTIARY MATRICULATION SCREENING
FRIDAY 2ND SEPTEMBER, 2011 2.00PM

Time allowed 1Hr 15mins

INSTRUCTIONS

Read the following instructions carefully

1. Use **HB pencil** to shade your answers. Ensure that any shading in error is thoroughly erased.
2. Candidates should indicate **the Question Paper Type** given to them in the appropriate space in the **Answer Sheet**
3. Write your **JAMB** Registration number on the Question Paper in the space provided at the top of page 1.
4. The use of calculators and/or similar electronic devices is **NOT** allowed

SECTION I: ENGLISH

Read the following passage and answer the questions on it.

At last the rain came. It was sudden and tremendous. For two or three moons the sun had been gathering strength till it seemed to breathe a breath of fire on the earth. All the grass had long been scorched brown and the earth felt like live coals to the feet. Ever-green trees wore dusty coat of brown. The birds were silenced in the forests, and the world lay panting under the live vibrating heat. And then came the clap of thunder. It was an angry metallic and thirsty clap, unlike the deep and liquid rumbling of the rainy season. A mighty wind arose and filled the air with dust. Palm trees swayed as the wind combed their leaves into flying crests like strange and fantastic coiffure.

When the rain finally came, it was in large solid drops of frozen water which the people called “the nuts of the water of heaven”. They were hard and painful on the body as they fell, yet young people ran about happily picking up the cold nuts and throwing them into their mouth to melt.

The earth came to life, and the birds in the forests fluttered around and chirped merrily. A vague scent of life and green vegetation was diffused in the air. As the rain began to fall more soberly and in smaller liquid drops, children sought for shelter, and all were happy, refreshed and thankful.

1. From the story above, we can deduce that -----(a) This was the first rain of that year (b) this was one of the numerous rains of the year (c) the rain never fell (d) the rain caused flooding
2. The falling of the rain brought the people ----- (a) hardship (b) succour (c) thirst (d) pain
3. Moons according to the passage, means ----- (a) years (b) days (c) hours (d) months

4. According to the passage, what is the meaning of the expression “ The earth quickly came to life”
(a) the otherwise dry vegetation became worse (b) the dry vegetation regenerated (c) the dry vegetation became watery (d) the vegetation died as a result of wetness
 5. The expression “live vibrating heat” means: (a) extremely hot (b) tepidly cold (c) moderately hot (d) cool
 6. Metallic according to the passage means: (a) Melodious (b) Mellifluous (c) harsh (d) undefinable
 7. As the rain fell, the children in the passage particularly ----- the rain (a) hated (b) were indifferent (c) were not allowed in (d) loved the rain
 8. The rain was “... hard and painful on the body” because(a) it fell scantily (b) it fell heavily (c) it fell in little torrents (d) it fell in large solid drops of frozen water
 9. A befitting title for the passage is..... (a) the torrential rain (b) the first rain of the year (c) the last of the rains
(d) the earth vibrates.
 10. Ever-green trees wore a dusty coat of brown because (a) it had just rained (b) it was winter in the village
(c) it had not rained in a long time (d) that was the natural colour of the plants
- After each of the following sentences, a list of possible interpretation is given, choose the interpretation that you consider most appropriate for each sentence.**
11. It's obvious that Paul set little store by our friendship. This means that Paul (a) does not remember our friendship (b) thinks it's easy to make friends (c) does not value our friendship (d) thinks we 've been friends for too long
 12. Although wrestling is popular, it is not my cup of tea. This means that wrestling
(a) is a primitive game (b) is not lucrative (c) is rough (d) does not interest me
 13. Voke's mother keeps her nose to the grindstone. This means that Voke's mother (a) makes Voke grind things all the time (b) forces her to grind stones (c) keeps her hand on Voke's nose (d) makes Voke work all the time
 14. She delivered her speech without turning a hair. This means that she delivered her speech without
(a) nodding (b) any emotion (c) looking up (d) combing her hair
 15. Ayo goes bananas every night she comes here. This means that every night Ayo comes here, she
(a) is cool and gentle (b) breaks her fast (c) prefers to be served with banana (d) is angry
 16. Idemudia is in rude health. This means he is (a) so rude and stubborn that nobody likes him. (b) in a poor state of health (c) is in a very good health (d) is arrogant
 17. Victor was advised to grasp the nettle. This means he was advised to (a) avoid wasting an opportunity (b) deal with a difficult matter firmly (c) listen attentively to instructions (d) avoid dishonest people
 18. It is obvious that civil engineers are thick on the ground. This means civil engineers are --- (a) scarce (b) experienced (c) many (d) familiar with ground

19. The girl is in foal. This means the girl is (a) idle (b) pregnant (c) busy at work (d) enterprising
20. Mr. Okoh's plans are castles in the air. This means that plans are (a) abstract (b) doubtful to come true (c) great (d) to make him a pilot
21. In mathematics class, Olu always feel like a fish out of water. This means that in mathematics class, Olu always (a) feels comfortable (b) feel shy (c) feel unrecognized (d) feels strange
- Choose the option nearest in meaning to the underlined words in Nos. 22-35**
22. The traders unwittingly allowed themselves to be duped by fraudsters
(a) knowingly (b) inadvertently (c) unfortunately (d) intentionally
23. It was an agreeable atmosphere when the old classmates met at their reunion
(a) a congenial (b) a congenital (c) an attractive (d) a palpable
24. For the Umpteenth time, she warned her friend to stop shouting
(a) first of many times (b) fifteenth time (c) last of many times (d) last time
25. The new staff member turned out to be an old flame of mine
(a) a former girl friend (b) an old acquaintance (c) an old classmate (d) a former neighbour
26. It was an awful day: All our plans went haywire (a) were tied up (b) were disrupted (c) became difficult to carry out (d) were abandoned
27. The material in the book is presented within a eclectic framework (a) a simple (b) a broad (c) a restricted (d) a clumsy
28. Ohiokhen had a brainwave as to how she could deal with the problem
(a) an imagination (b) a desire (c) a headache (d) an idea
29. Surely, Ahmed is a ball of fire (a) a quarrelsome person (b) a hot-head activist (c) a flery speaker or writer (d) a very energetic person
30. This time, she will be competing with a dark horse (a) a weak and low-spirited person (b) a person about whom little is know (c) an unpopular candidate (d) a person as strong as a horse
31. In answer to the question as to how life is treating him the stranger said 'it never rains but it pours'
(a) the blessing of life shower on him like a heavy rain (b) he is contented with his improved fortunes (c) thing are getting decidedly worse (d) his financial status is deteriorating
32. After many years of struggle as a trader, he struck gold (a) became quite rich (b) won a big contract (c) became a gold miner (d) became a goldsmith
33. One significant characteristic of the jet age is that it encourages people to cut corners (a) not to face all problems (b) to want to be come rich quickly (c) to want to avoid necessary hardships (d) not to do the proper thing at the right time
34. Any student found guilty of examination malpractice should be allowed to stew in his own juice
(a) taste a repeat of the examination (b) suffer the consequences of his action (c) bear the brunt of the disgrace (d) forfeit the opportunity of further education
35. The lady who won the beauty contest had a good gait (a) stature (b) figure (c) elegance (d) carriage

Complete the following sentences with the best option

36. I don't want to ----- your morale before the competition begins (a) damping (b) damp (c) dampen (d) doubt
37. The new president ----- the cooperation of everybody (a) requested (b) requested for (c) request (d) requests for
38. The man will not ----- any act of indiscipline from here.
(a) console (b) condole (c) dondone (d) connote
39. Unless your excuse of alibi is ----- by a willing witness, the judge will convict you
(a) collaborated (b) corrected (c) correlated (d) corroborated
40. The woman complained to the police that she --- (a) has been duped (b) was been duped (c) had been duped (d) had being duped

SECTION II: GENERAL PAPER

1. Find the value of α if the line $2y - \alpha x + 4 = 0$ is perpendicular to the line $y + 1/4x - 7 = 0$ (a) -4 (b) 4 (c) 8 (d) -8
2. Find the tangent of the acute angle between the lines $2x + y = 3$ and $3x - 2y = 5$ (a) $-7/4$ (b) $7/8$ (c) $7/4$ (d) $7/2$
3. Find the value of P if the line joining (P,4) and (6, -2) is perpendicular to the line joining (2,P) and (-1, 3)
(a) 4 (b) 6 (c) 3 (d) 0
4. Find the equation of a line perpendicular to the line $3x + 2y + 4 = 0$ and passing through the points (5,6)
(a) $3x + 2y - 27 = 0$ (b) $2x + 3y + 8 = 0$ (c) $2x - 3y + 8 = 0$ (d) $3x + 2y = -8$
5. Two perpendicular lines PQ and QR intercept at (1, -1). If the equation of PQ is $x - 2y + 4 = 0$, find the equation of QR
(a) $x - 2y + 1 = 0$ (b) $2y + x - 3 = 0$ (c) $x - 2y - 3 = 0$ (d) $2x + y - 1 = 0$
6. Differentiate $(2x+5)^2(x-4)$ with respect to x (a) $4(2x+5)(x-4)$ (b) $4(2x+5)(4x-3)$ (c) $(2x+5)(2x-13)$ (d) $(2x+5)(6x-11)$
7. Find the slope of the curve $y = 2x^2 + 5x - 3$ at (1,4) (a) 9 (b) 7 (c) 6 (d) 4
8. Find the probability that a number selected at random from 20 to 30 is a prime number or a multiple of 3
(a) $6/11$ (b) $4/11$ (c) $2/11$ (d) $8/11$
9. Three numbers a, b and c are in the ratio 3: 2: 5. The value of $\frac{4a - c}{a + 2b}$ is (a) $1/2$ (b) $2^{1/3}$ (c) $\frac{3}{7}$ (d) 1
10. If 45% of the Nigeria naira (₦) is equal to 35% of a foreign currency \$, the conversion rate of \$ to ₦ is
\$1 = (a) ₦ $\frac{7}{9}$ (b) ₦ $1\frac{2}{7}$ (c) ₦ $2\frac{2}{9}$ (d) ₦ $2\frac{6}{7}$

11. P is directly proportional to M and inversely proportional to N. If $P=9$ when $M=24$ and $N=8$, find the value of P when $M=5$ and $N=6$ (a) $1\frac{1}{4}$ (b) $2\frac{1}{2}$ (c) $3\frac{3}{5}$ (d) 11
12. For what range of values of y is $y-1 > 4(y+2)$? (a) $y < -3$ (b) $y > -3$ (c) $2 < y < 3$ (d) $-3 < y < -2$
13. The exterior angles of a quadrilateral are give as x, $2x+5$, $x+15$ and $3x-10$. The value of x is (a) 50° (b) 52.86° (c) 60° (d) 61.43°
14. If $4\sin^2\theta - 3 = 0$, the value of θ for $0 < \theta < 90^\circ$ is (a) 30° (b) 45° (c) 60° (d) 90°
15. If $\mu = \{\text{integers} \leq 20\}$, $X = \{\text{multiples of } 4\}$, $Y = \{\text{multiples of } 3\}$, the elements of $X \cap Y$ are (a) $\{12\}$ (b) $\{3,6,9,12,15,18\}$ (c) $\{3,6,9,15,18\}$ (d) $\{4,8,16,20\}$
16. If a Harbor defence cannon located at sea level has a muzzle velocity 82m/s . To what angle must the cannon be elevated so as to hit a ship 500m away if one of the angles is 27.35° (a) 40.6° (b) 62.65° (c) 81.2° (d) 14.8°
17. A mango fruit drops from a branch 10m above the ground. Just before hitting the ground its velocity is? ($g = 10\text{m/s}^2$) (a) 100m/s (b) $5\sqrt{2}\text{ m/s}$ (c) $10\sqrt{2}\text{ m/s}$ (d) $20/\sqrt{2}\text{ m/s}$
18. What volume of substance 'y' with a density of $8.4 \times 10^2 \text{ kgm}^{-3}$ will have the same mass as 4.2m^3 of substance 'x' whose density is $7.2 \times 10^2 \text{ kgm}^{-3}$? (a) 1.4m^3 (b) 3.6m^3 (c) 4.9m^3 (d) 5.8m^3
19. A pressure cooker saves both time and fuel in cooking because inside the cooker the.... (a) boiling point of water is raised (b) the temperature is evenly distributed (c) pressure is constant (d) volume of steam varies
20. Which of the following phenomenon CANNOT be explained by the molecular theory of matter (a) expansion (b) radiation (c) conduction (d) evaporation
21. A light wave of frequency $5 \times 10^{14} \text{ Hz}$ moves through water which has a refractive index of $\frac{4}{3}$. Calculate the wavelength in water if the velocity of light in air is $3 \times 10^8 \text{ m/s}$. (a) $4.5 \times 10^{-7} \text{ m}$ (b) $6.0 \times 10^{-7} \text{ m}$ (c) $1.7 \times 10^6 \text{ m}$ (d) $2.2 \times 10^6 \text{ m}$
22. An isolated conducting sphere whose radius is 6.85cm has a charge 1.25nC . How much potential energy is stored in the electric field of the charged conductor? (a) 100nJ (b) 101nJ (c) 103nJ (d) 104nJ
23. Choose the correct statement(s) (a) Resistance is a property of an object (b) Resistivity is the property of a material (c) Resistance is a property of a material (d) Resistivity is the property of an object
24. A common flashlight bulb is rated 0.30A and 2.9V . If the resistance of the tungsten bulb filament at temperature 20°C is 1.1Ω , find the temperature of the filament when the bulb is on (a) $1.1 \times 10^7^\circ\text{C}$ (b) $1.8 \times 10^3^\circ\text{C}$ (c) $1.5 \times 10^5^\circ\text{C}$ (d) $1.7 \times 10^2^\circ\text{C}$
25. Thermal energy is produced in a resistor at a rate of 100W when the current is 3.00A . Find the resistance (a) 11.0Ω (b) 11.1Ω (c) 11.5Ω (d) 11.3Ω

26. A straight horizontal length of copper wire has a current of 28A through it. Find the magnitude of the minimum magnetic field needed to suspend the wire. The linear density of the wire is 46.6g/m
 (a) 1.6×10^{-2} T (b) 1.5×10^{-2} T (c) 1.4×10^{-2} T (d) 1.3×10^{-2} T
27. A series RLC circuit has inductance 12mH, capacitance 1.6 μ F and resistance 1.5 Ω . Find the time when the amplitude of the charge oscillating will be 50% of initial value
 (a) 11ms (b) 10ms (c) 8ms (d) 9ms
28. Which of the following pairs illustrate isotopy?
 (a) oxygen and ozone (b) But-1-ene and But-2-ene (c) hydrogen and deuterium (d) ortho-hydrogen and para-hydrogen
29. A gas occupying an initial volume of 2dm³ is heated and allowed to expand to 6dm³ at constant pressure. The ratio of the initial absolute temperature to the final absolute temperature is
 (a) 3:1 (b) 1:3 (c) 2:1 (d) 1:2
30. Why are collisions between gas molecules said to be elastic? (a) No loss of energy after collision (b) molecules move apart in straight lines after collision (c) total momentum decreases after collision (d) total momentum increases after collision
31. Which of the following reactions is accompanied by the second ionization energy of an element?
 (a) $X_{(g)} \rightarrow X_{(g)}^- + e^-$ (b) $X_{(g)} \rightarrow X_{(g)}^+ + e^-$ (c) $X_{(g)}^+ \rightarrow X_{(g)}^{2+} + e^-$ (d) $X_{(g)}^+ \rightarrow X_{(g)}^- + e^-$
32. How much heat will be liberated if 10g of hydrogen burns in excess oxygen according to the following thermochemical equation? $H_{2(g)} + \frac{1}{2} O_{2(g)} \rightarrow H_2O_{(l)} \Delta H = -286KJ$ (a) -1430 KJ (b) -2860KJ (c) -572KJ (d) -286KJ
33. Which of the changes determines the spontaneity of a chemical reaction? (a) volume of the reactants (b) free energy of the system (c) entropy of the system (d) enthalpy of the system
34. Which of the following statements is NOT correct of group (VII) elements? They (a) are diatomic (b) are good oxidizing agent (c) are highly electronegative (d) have relatively low ionization potentials
35. Calculate the minimum volume oxygen required for the complete combustion of a mixture of 20cm³ of CO and 20cm³ of H₂ (a) 10cm³ (b) 20cm³ (c) 40cm³ (d) 80cm³
36. Calculate the quantity of electricity required to deposit 64.0g of copper from copper (II) chloride (Cu= 64 1F = 96500C) (a) 3.09×10^6 C (b) 1.93×10^5 C (c) 9.65×10^4 C (d) 6.18×10^6 C
37. Which of the reactions of marble with dilute HCl is fastest? (a) 5g of marble lump at 50^oC (b) 5g of marble lump at 25^oC (c) 5g of marble powder at 50^oC (d) 5g of powder at 25^oC
38. How many political parties were registered for the last general election in Nigeria?
 (a) 48 (b) 54 (c) 25 (d) 38
39. When was the ICJ judgment between Nigeria and Cameroon delivered? (a) Oct. 10, 2002 (b) Sept 12, 2001 (c) Sept. 11, 1999 (d) Aug. 14, 2001
40. Which state in Nigeria has the highest number of Local Government Area? (a) Katsina (b) Bayelsa (c) Kano (d) Sokoto

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA
POST UNIFIED TERTIARY MATRICULATION SCREENING
FRIDAY 15th JUNE, 2012 2.00PM

Time allowed 1Hr

INSTRUCTIONS

Read the following instructions carefully

1. Use **HB pencil** to shade your answers. Ensure that any shading in error is thoroughly erased.
2. Candidates should indicate **the Question Paper Type** given to them in the appropriate space in the **Answer Sheet**
3. Write your **JAMB** Registration number on the Question Paper in the space provided at the top of page 1.
4. The use of calculators and/or similar electronic devices is **NOT** allowed

SECTION I - ENGLISH

Read the following passage and answer the questions that follow by choosing the appropriate option

From one examination year to another, students seeking admission into Nigerian higher institutions of learning perform poorly in their examination papers, particularly in the English Language and Mathematics papers. Often, they blame JAMB and schools for their poor performances. In turn, JAMB and schools do blame students for unseriousness and a number of other personal factors that make students perform very poorly in the English and Mathematics papers. Apart from the apathy that students have for these two and other subjects, inadequate preparation for examination is a major bane of good performance in JAMB and POST-UTME. Perhaps, we should quickly mention students' heavy reliance on sharp practices of different types which they commit before, during and after the examination.

Miscomprehension of questions and violation of instructions are no least a factor. Besides, are students even conscious that minor mistakes that they make when they complete, fill in and shade materials on the internet and during examination can rob them of excellence and consequently admission?

1. A suitable title for this passage is (a) Students' complaints about poor performance (b) Why students perform poorly in JAMB and POST-UTME (c) Students' and JAMB's feeling about poor performances (d) Factors that can enhance good performance examination
2. Which of the following points is not implied in the passage? (a) Performance is generally poor in JAMB and POST-UTME (b) Students have their share of blame in this (c) Examination bodies are not to blame (d) Performance in language and calculation subject is worst
3. By implication in the passage, the least of the factors is (a) Misunderstanding of questions and flouting

instructions (b) The examination bodies (c) The students themselves (d) Examination sharp practices at different times

4. What is the leading pre-examination factor that the writer holds responsible for failure in English and Maths?
(a) Lack of preparation (b) Apathy for the subject (c) Attitude of the examining body
(d) Reliance on illegal aids and materials
5. The word *apathy* as used in the passage suggests (a) fear of some subjects (b) Animosity for some subjects
(c) Laziness and complexity of some subjects (d) Lack of interest in and love for some subjects

Choose the option nearest in meaning to the italicized words

6. The tenure of the principal was an *unmitigated* disaster
(a) unfortunate (b) unexpected (c) unqualified (d) unprecedented
7. Among the mountains in the Cameroun, there is an *extinct* volcano
(a) inactive (b) expired (c) extinguished (d) obsolete
8. The dispute between the two countries has resulted in the *severity* of diplomatic relations
(a) stopping (b) breaking (c) withdrawing (d) cancelling
9. The *loud noise* of the police siren woke us up (a) clamour (b) ding-dong (c) whistle (d) wail
10. The patient is suffering from *an ailment that keeps recurring*
(a) a chronic ailment (b) a frequent ailment (c) an acute ailment (d) a constant ailment

Choose the option that best fills the blank

11. The rise in workers' pay is truly a ----- booster (a) moral (b) morale (c) soul (d) spirit
12. For the sake of clarity, the professor was asked to ----- on the hypothesis
(a) expatiate (b) expand (c) expantiate (d) explicate
13. The doctor did not find it difficult to ----- the patient's ailment
(a) discover (b) diagonize (c) divine (d) diagnose
14. The new riot squad was armed to the ---- (a) head (b) neck (c) teeth (d) feet
15. The controversy has been ---- to rest (a) lain (b) lied (c) laid (d) lying

In each of questions 16 – 25, choose the option opposite in meaning to the word(s) or phrase in italics

16. The officer asked for a more *temperate* assessment of the matter
(a) extreme (b) moderate (c) radical (d) humane
17. My father's advice to me was quite *invaluable* (a) useless (b) useful (c) helpful (d) unsolicited
18. Musa hates Hadiza for her constant *bellicose* behavior (a) violent (b) gentle (c) meek (d) troublesome
19. There is much *indifference* in his behavior (a) concern (b) nonchalance (c) willingness (d) inconsistency
20. My brother married a *loquacious* woman (a) quiet (b) busy (c) talkative (d) beautiful
21. Most warring countries end up in state of *satiation* (a) hunger (b) thirst (c) danger (d) famine
22. Abdul is fond of his teacher though he sometimes makes *derogatory* remarks about him
(a) unpleasant (b) complimentary (c) expensive (d) inconsiderate

23. The Minister has finally been dropped from the present cabinet because of his *ignoble* act
 (a) criminal (b) ignorant (c) honourable (d) selfish
24. His cruelty to his mother *defies* logical explanation (a) demands (b) offers (c) projects (d) precludes
25. Orinya balances the pail on her head with *accustomed* ease.
 (a) convincing (b) surprising (c) unwary (d) unusual

From the words lettered A to D, choose the word that has the same consonant sound(s) as the one represented by the letter(s) underlined

26. Ship (a) official (b) vision (c) seizure (d) revision
27. Author (a) rather (b) mother (c) though (d) thwart
28. Chant (a) cheat (b) character (c) chief (d) chemistry
29. Behind (a) whore (b) hour (c) honour (d) honest
30. Barge (a) gin (b) guest (c) gasp (d) grade

SECTION II: GENERAL PAPER

1. Find the possible values of $\tan^2 x$ if $\tan x = \frac{1}{2}$ (a) $-2 \pm \sqrt{5}$ (b) $4 \pm \sqrt{5}$ (c) $2 \pm \sqrt{6}$ (d) $2 \pm \sqrt{5}$
2. If $\tan(x+45)^\circ = 2$, find without using tables the value of $\tan x$ (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{4}{3}$ (d) $\frac{3}{4}$
3. Without using table evaluate $\frac{1 + \tan 60^\circ \tan 30^\circ}{\tan 60^\circ + \tan 30^\circ}$ (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$ (c) $\sqrt{3}$ (d) $1/\sqrt{3}$
4. If $\sin \theta = \frac{15}{17}$, where θ is acute, find $\tan \theta$ (a) $\frac{17}{15}$ (b) $\frac{8}{17}$ (c) $\frac{8}{15}$ (d) $\frac{15}{8}$
5. The turning point on the curve $y = 3x^2 - 9x + 12$ is
 (a) maximum at $x = -1.5$ (b) minimum at $x = 1.5$ (c) maximum at $x = 1.5$ (d) minimum at $x = -1.5$
6. Find the area bounded by the curve $y = x(2-x)$, the x-axis, $x = 0$ and $x = 2$
 (a) 4 sq units (b) 2 sq units (c) $\frac{4}{3}$ sq units (d) $\frac{1}{3}$ sq units
7. 4.5 and 5 are respectively the averages of two sets of numbers 3, 4, x, y and 2x, y, 4, 3. Calculate the values of (x, y) (a) (9, 2) (b) (2, 9) (c) (5, 4) (d) (4, 6)
8. Factorize $14! - 10(13!)$ (a) 14 (b) $2(13!)$ (c) $3(13!)$ (d) $13!(4)$
9. The probability of an event P is $\frac{3}{4}$ while that of another event Q is $\frac{1}{6}$. If the probability of both P and Q is $\frac{1}{12}$.

What is the probability of either P or Q? (a) $\frac{1}{96}$ (b) $\frac{1}{8}$ (c) $\frac{5}{6}$ (d) $\frac{11}{12}$

10. X and Y are two events. The probability of X or Y is 0.7 and the probability of X is 0.4. If X and Y are independent, find the probability of Y (a) 0.30 (b) 0.50 (c) 0.57 (d) 1.80

11. The angle of elevation of a point T on a tower from a point U on the horizontal ground is 30° . If TU = 54 m, how high is T above the horizontal ground? (a) 108 m (b) 27 m (c) 46.3 m (d) 31.2 m

12. Calculate and correct to 2 significant figure, the length of arc of a circle of radius 3.5 cm which subtends an angle of 75° at the centre of the circle. (Take $\pi = \frac{22}{7}$) (a) 2.3 cm (b) 4.6 cm (c) 8 cm (d) 16 cm

13. Make r the subject of the formula $\frac{x}{r+a} = \frac{a}{r}$ (a) $a^2/x-a$ (b) $a^2/x+a$ (c) $a/x-a$ (d) $a/x+a$

14. A binary operation on the set of real numbers excluding -1 is such that all $m, n \in \mathbb{R}$, $m \Delta n = m+n+mn$.

Find the identity element of the operation (a) 1 (b) 0 (c) $-\frac{1}{2}$ (d) -1

15. A binary operation $x*y = x^2 - y^2/2xy$. Find $-5*3$. (a) $-\frac{8}{15}$ (b) $\frac{8}{15}$ (c) $\frac{17}{15}$ (d) $-\frac{17}{15}$

16. What is the mid point of the line joining the points $(2x, y)$ and $(x, 2y)$?

(a) $(\frac{x}{2}, \frac{y}{2})$ (b) $(\frac{x}{2}, 3y)$ (c) $(\frac{3x}{2}, \frac{y}{2})$ (d) $(\frac{3x}{2}, \frac{3y}{2})$

17. Find the equation of a straight line of gradient 2 through the point (1, 4)

(a) $y=x-2$ (b) $y=2x-4$ (c) $y=-2x-4$ (d) $y=2x+2$

18. A radio waves have a velocity of 3×10^8 m/s. A radio station sends out a broadcast on a frequency of 800 KHz. Find the wavelength of the broadcast. (a) 267 m (b) 37.5 m (c) 400 m (d) 375 m

19. A wave of frequency 10 Hz forms a stationary wave pattern in a medium where the velocity is 20 cm/s. The distance between adjacent node is (a) 2 cm (b) 1 cm (c) 1.5 cm (d) 5 cm

20. A piano wire 0.5 m long has a total mass of 0.01 kg and is stretched with a tension of 800 N. Calculate the frequency of the wire when it sounds its fundamental note (a) 200 Hz (b) 100 Hz (c) 4 Hz (d) 2 Hz

21. A concave mirror has a focal length of 12 cm. At what distance from the mirror should an object be placed to give an image exactly as the object (a) 12 cm (b) 6 cm (c) 24 cm (d) 36 cm

22. The operation of optical fibre is based on the principle of (a) polarization of light (b) total internal reflection of light (c) refraction of light (d) interference of light

23. For the correction of myopic defects in human eye we require
 (a) convex lens (b) concave lens (c) combination of concave and convex lenses (d) concave mirror
24. A radioactive sample initially contains N atoms. After three half lives the number of atoms that disintegrated is (a) $N/8$ (b) $3N/8$ (c) $5N/8$ (d) $7N/8$
25. Which of the following are produced after a nuclear fusion process? I One heavy nucleus II Neutrons III Proton IV Energy (a) I and II (b) I and IV (c) II and III (d) II and IV
26. Which of the following is correct about a capacitor connected to an A.C. source? (a) Current lags the voltage by 90° (b) Current leads the voltage by 180° (c) Voltage lags the current by 90° (d) voltage leads the current by 90°
27. Three resistors 2Ω , 3Ω and 4Ω are connected in parallel to a voltage supply of 5 V. Calculate the current in the 3Ω resistor (a) $3/5$ A (b) $5/3$ A (c) $2/5$ A (d) $5/2$ A
28. Three resistors 2Ω , 3Ω and $x\Omega$ are connected in parallel. If the total resistance of the connection is 0.5Ω , find the value of the unknown resistor (a) $7/6 \Omega$ (b) $5/7\Omega$ (c) $6/7 \Omega$ (d) $7/5 \Omega$
29. A working electric motor takes a current 1.5 A when the P.d across it is 250 V. If its efficiency is 80%, the power output is (a) 350 W (b) 250 W (c) 200 W (d) 300W
30. Which of these is the correct expression for force experienced by a charge undergoing motion?
 (a) $F=BIV$ (b) $F=BIQ$ (c) $F=BQV$ (d) $F=BQL$
31. A herdsman yelling out to a fellow herdsman heard his voice reflected by a cliff 4s later. What is the velocity of sound in air if the cliff is 680 m away? (a) 170 ms^{-1} (b) 136 ms^{-1} (c) 340 ms^{-1} (d) 680 ms^{-1}
32. One of the following readings represent the measurement of the length of a metal rod using vernier calipers. Taking the reading accuracy into consideration, the most likely one is
 (a) 5.16 cm (b) 5.165 cm (c) 5.0 cm (d) 5.160cm
33. The minimum volume of oxygen required for the complete combustion of a mixture of 10 cm^3 of CO and 15cm^3 of H_2 is (a) 12.5 cm^3 (b) 25.0 cm^3 (c) 5.0 cm^3 (d) 10.0 cm^3
34. Which of the following substances is NOT a homogenous mixture?
 (a) Filtered sea water (b) soft drink (c) flood water (d) writing ink
35. The characteristic reaction of caustic compounds is
 (a) substitution (b) elimination (c) addition (d) saponification
36. How many grammes of bromine will be required to completely react with 10 grammes of propyne?
 (a) 20 g (b) 40 g (c) 60 g (d) 80 g
37. Which of the following set of elements has the same outermost electronic configuration
 (a) H, He, Be (b) H, Li, Be (c) H, Li, Na (d) He, Ne, Ar
38. Which of the following periodic properties decreases down the group?
 (a) Atomic radius (b) Electron affinity (c) Ionic radius (d) Electropositivity
39. Which of the following is an ore of Aluminum (a) Casciterite (b) Haematite (c) Magnetite (d) Cryolite
40. What is the value of n in the equation? $\text{XO}_4^- + 8\text{H}^+ + ne \rightarrow \text{X}^{2+} + 4\text{H}_2\text{O}$ (a) 5 (b) 4 (c) 3 (d) 2

41. Which of the following ions is a pollutant in drinking water even in trace amounts
(a) Ca^{2+} (b) Hg^{2+} (c) Mg^{2+} (d) Fe^{2+}
42. 1.1 g of CaCl_2 dissolved in 50 cm^3 of water caused a rise in temperature of 3.4°C . The heat of reaction, ΔH for CaCl_2 in kJ per mole is (a) -71.1 (b) -4.18 (c) +71.1 (d) +111.0
(Ca=40, Cl=35.5, specific heat of water is 4.18 JK^{-1})
43. Helium is often used in observation balloons because it is (a) light and combustible (b) light and non-combustible (c) heavy and combustible (d) heavy and non-combustible
44. Which of the following solution will have a pH <7?
(a) $\text{Na}_2\text{SO}_{4(\text{aq})}$ (b) $\text{NaCl}_{(\text{aq})}$ (c) $\text{Na}_2\text{CO}_{3(\text{aq})}$ (d) $\text{NH}_4\text{Cl}_{(\text{aq})}$
45. General Yakubu Gowon created 12 States in Nigeria on
(a) 27/5/1967 (b) 27/6/1967 (c) 20/10/1968 (d) 21/11/1970
46. Which of these countries is NOT a member of the Commonwealth of Nations?
(a) Nigeria (b) Canada (c) India (d) Niger
47. Nigeria first Senate President was
(a) Dr Joseph Wayas (b) Dr Iyorchia Ayu (c) Dr Nwafor Onzu (d) Ameh Ebute
48. What percentage of the world Earthquakes and volcanicity occur around the 'Circum-Pacific Ring of Fires'?
(a) 10% (b) 40% (c) 25% (d) 70%
49. In which of the following layers of the Atmosphere are transmission of radio waves possible?
(a) The Ionosphere (b) The Stratosphere (c) The Troposphere (d) The Mesosphere
50. In Karst Regions, limestone pavements called grikes are formed through the process of
(a) solvent action (b) chelation (c) carbonation (d) hydrolysis

UNIVERSITY OF BENIN, BENIN CITY, NIGERIA

POST UTME SCREENING 2014/2015

Friday, July 25th, 2014

COURSE: Engineering, Physical Sciences, Education – Total Time Allowed: 1 hour
Physical Sciences & Technical Education

Name _____ JAMB Reg. No. _____

Read the following instructions carefully:

- i. use HB pencil only and shade in your names. Ensure that any shading in error is thoroughly erased.
- ii. candidates should write their full names (surname first), JAMB registration number, sex, JAMB score, course of first choice and the paper type given to them, in the appropriate spaces on the answer sheet.
- iii. attempt all questions. Each candidate must submit the answer sheet with the question paper.
- iv. the use of calculators and/or similar electronic devices is NOT allowed.

SUBJECT: ENGLISH LANGUAGE

Read the passage and fill the numbered gaps with the correct option lettered A – D

Emeka and his auntie arrived in PortHarcourt during the rush-hour, when offices and shops were closing and workers were hurrying home. Emeka had never seen so many people on the streets or so many – 1 – on the roads. Emeka’s auntie told him that the taxies had the worst drivers. One minute they would be – 2 – other cars, the next stepping in the middle of the road to pick up – 3 – without any signal to other drivers of their intentions. There were long – 4 – of people waiting at bus – 5 – and – 6 – often seemed in danger of their lives as they tried to run across the road whenever there was a lull in the traffic. Emeka heard the blaring horn of a/an – 7 – as it rushed to pick up the victims of an accident, and this was followed by four policemen in an open – 8 –. His auntie told him that the police did not have to – 9 – the speed limit in cases of emergency, but civilian drivers could be heavily – 10 – for speeding.

	A	B	C	D
1.	Transports	vehicles	wagons	trucks
2.	Bypassing	undertaking	taking over	overtaking
3.	Bystanders	clients	passengers	passers-by
4.	Tiers	rows	crowds	queues
5.	Stops	stations	parks	halts
6.	Walkers	linkers	foot-passengers	pedestrians
7.	Lorry	omnibus	ambulance	bus
8.	Car	van	carriage	saloon
9.	keep	exceed	observe	see
10.	imprisoned	detained	remunerated	fined

Below each sentence containing an Idiomatic expression, there are options lettered A – D. Choose the option that best explains the underlined idioms.

11. I assured him I would not go back on my word (a) return to a place
(b) return to a certain word while reading (c) re-use my word
(d) fail to keep my promise
12. Burning the midnight oil is not a prerequisite for success in examinations. This means that to pass examinations,
(a) does not need to study very seriously (b) doesn't need to work late into the night (c) shouldn't read at all in the night (d) shouldn't burn oil while reading in the night
13. Adam's opponent has an axe to grind
(a) has an axe to sharpen (b) has some selfish objective in view
(c) will grind with axe (d) has some pepper to grind
14. Jude paid through his nose for his new car. This means he
(a) paid a very low price (b) paid a very high price (c) paid through an agent
(d) paid throughout the year
15. The company closed down once it was in the red.
(a) in debt (b) bankrupt (c) disorganised (d) burgled

Fill in the blank spaces with the correct option.

16. The Director told his staff that their hardest job was yet _____
(a) coming (b) to have come (c) to come (d) come
17. _____ the confusion, no one knew what to do next.
(a) Despite (b) Because (c) Since (d) Contrary to
18. The students did not know whether they were expected to finish the exercise _____
(a) or that (b) yet too (c) or not (d) nor that
19. Paul couldn't tell the stranger _____ to the post office.
(a) got (b) how to get (c) whether to get (d) he got
20. _____ you have learned the elements of a game such as table tennis, you can enjoy watching it. (a) Although (b) Once (c) Soon (d) At once

From the options lettered A – D, choose the one that is most nearly opposite in meaning to the underlined word.

21. The prices of ram and _____ have escalated because of Christmas.
(a) cow (b) ewe (c) guinea fowl (d) mule
22. Valour and _____ are different attributes respectively.
(a) selfishness (b) cowardice (c) laziness (d) lust
23. Peter is very optimistic about the business while his father is _____.
(a) antagonistic (b) opportunist (c) pessimistic (d) unconvinced
24. The probationary workers do not have the same rights as _____ staff.
(a) proscribed (b) confirmed (c) postponed (d) probable
25. The testimony of the witness was so vague that it was difficult to learn the _____ details of the case. (a) specific (b) transparent (c) hidden (d) minute

From the options lettered A – D, choose the one that is nearly the same in meaning to the underlined word.

26. The lawyer's argument of the case was exhaustive.
(a) thorough (b) interesting (c) exaggerating (d) fascinating
27. The students were advised to be careful of mundane things.

- (a) sinful (b) immoral (c) evil (d) worldly
28. The Minister described the new policy as obnoxious.
 (a) Unpredictable (b) offensive (c) prudent (d) affordable
29. The budget of 2014 was designed to consolidate the gains of the economic recovery programme. (a) protect (b) support (c) strengthen (d) diversify
30. The Art teacher told John that his painting 'The walls of Kano' was so realistic, that it might almost have been a photograph.
 (a) clear (b) vivid (c) authentic (d) literal

From the word lettered A – D, choose the one that best complete each of the following sentences

31. I _____ for sure that success _____ one.
 (a) know/exalt (b) knows/exalt (c) know/exalts (d) knows/exalts
32. The lecturer does not _____ his real age.
 (a) seems (b) look (c) appear (d) resemble
33. The speaker could not _____ his points before the bell sounded.
 (a) round up (b) round off (c) round of (d) round over
34. The meeting did not adjourn until it _____ all the matters before it.
 (a) has discussed (b) had discussed (c) have discussed (d) will discuss
35. Mr. Oshos has bought a _____ car.
 (a) brand new black sports car (b) ford sports new black brand
 (c) brand new ford sports black (d) brand new black ford sports
36. I think we _____ for Kano on Sunday, at least either then or next Tuesday.
 (a) left (b) would leave (c) leave (d) will have left
37. Food prices _____ a lot since last year.
 (a) have gone up (b) hard gone up (c) went up (d) go up
38. The answer to the sum is wrong. You _____ a mistake.
 (a) must make (b) must have made (c) can have made (d) may have made
39. The notes the teacher dictated this morning _____ forty pages.
 (a) ran through (b) ran over (c) ran into (d) ran for
40. _____, I would not have come
 (a) If I have known (b) If I had knew (c) Hard I known (d) Have I known

SUBJECT: GENERAL PAPER

- A school boy lying on the ground 30m away from the foot of a water tank tower observes that the angle of elevation of the top of the tank is 60° . Calculate the height of the water tank. (a) 60m (b) $30\sqrt{3}$ m (c) $20\sqrt{3}$ m (d) $10\sqrt{3}$ m
- The gradient of the line joining $(3, y)$ and $(-1, -2)$ is $\frac{3}{2}$. Find the value of y .
 (a) -4 (b) -3 (c) 3 (d) 4
- The binary operation $*$ is defined by $x * y = xy - y - x$, for all real values of x and y . If $x * 3 = 2 * x$, find x . (a) -1 (b) 0 (c) 1 (d) 5
- Find the limit of $\frac{x^2 - x}{x}$ as $x \rightarrow 0$. (a) -1 (b) 0 (c) 1 (d) 2
- The area of a sector of a circle is 246.4cm^2 . If the radius of the circle is 14cm, find the angle subtended at the centre. (a) 124° (b) 240° (c) 324° (d) 144°
- Which of these gases can be collected by the upward displacement of air?

- (a) NH₃ (b) H₂ (c) NO (d) Cl₂
7. How many dm³ of hydrogen, measured at s.t.p., would be needed to reduce 47.7g of copper (II) oxide to copper? (a) 4.48 (b) 6.72 (c) 10.82 (d) 13.44
8. The function of sulphur during the vulcanisation of rubber is to
 (a) convert rubber from thermosetting to thermoplastic polymer (b) form chains which bind rubber molecules together (c) act as a catalyst for the polymerization of rubber molecules (d) shorten the chain length of the polymer
9. Which of the following is a pollutant in drinking water even in trace amounts?
 (a) Zn²⁺ (b) Ca²⁺ (c) Hg²⁺ (d) K⁺
10. The IUPAC name of the compound having the structural formula CH₃CH₂CHClCH=CH-CH₂Cl, is
 (a) 1,4 – dichloro hexe (b) 1,4 – dichloro hex-4-ene (c) 2,6 – dichloro hexe (d) 1,4 – dichloro hex-2-ene
11. Which of the following pairs of reagents will react to form a precipitate?
 (a) Aqueous Ba(NO₃)₂ and aqueous H₂SO₄ (b) Aqueous KOH and aqueous HCl
 (c) Aqueous Cu(NO₃)₂ and aqueous HCl (d) Aqueous AgNO₃ and aqueous HNO₃
12. If $x^2 - xy - 6y^2 = 0$, find the values of $\frac{x}{y}$. (a) -2, 3 (b) -3, 2 (c) -4, 6 (d) 1, 3
13. Simplify $\log_3 9 + \log_3 21 - \log_3 7$. (a) 0 (b) 27 (c) $\frac{1}{3}$ (d) 3
14. A glass bottle is heated from 10°C to 40°C. If the linear expansivity of the glass and its volume at 40°C are $9 \times 10^{-16} \text{ K}^{-1}$ and 20,016.2cm³, respectively, calculate its volume at 10°C.
 (a) 20,000cm³ (b) 20,010.8cm³ (c) 20,013.5cm³ (d) 20,005.4cm³
15. If the period of a sound wave is 10⁻³s, calculate the distance covered by the wave after one complete revolution. [Take speed of sound in air as 330ms⁻¹].
 (a) 0.33m (b) 16.5 (c) 33m (d) 65m
16. An object is placed in front of two mirrors inclined at an angle θ to each other. If eight (8) images are formed, what is the value of θ ?
 (a) 40° (b) 50° (c) 60° (d) 120°
17. A cell delivers a current of 0.2A through a resistance of 10 Ω . When the resistance is reduced to 6 Ω the current delivered is 0.3A. What is the internal resistance of the cell? (a) 2.0 Ω (b) 1.5 Ω (c) 1.0 Ω (d) 0.7 Ω
18. A wire 4m long and of cross sectional area $2 \times 10^{-8} \text{ m}^2$ has a resistance of 5 Ω . Calculate its resistivity.
 (a) $4 \times 10^7 \Omega \text{ m}$ (b) $2.5 \times 10^7 \Omega \text{ m}$ (c) $4 \times 10^{-8} \Omega \text{ m}$ (d) $2.5 \times 10^{-8} \Omega \text{ m}$
19. What energy is radiated by an atom as an electron jumps from one level to another within the atom? [Plank's constant = $6.6 \times 10^{-34} \text{ Js}$, speed of light in vacuum is $3.0 \times 10^8 \text{ ms}^{-1}$, wavelength of emitted radiation is $3.3 \times 10^{-7} \text{ m}$].
 (a) $6.6 \times 10^{-19} \text{ J}$ (b) $6.0 \times 10^{-19} \text{ J}$ (c) $1.65 \times 10^{-17} \text{ J}$ (d) $6.60 \times 10^{-7} \text{ J}$
20. The handle of a screw jack of pitch 4mm turns through a circle of radius 21cm when it is used to raise a load. What is the velocity ratio of the jack? [$\pi = \frac{22}{7}$]. (a) 66 (b) 165 (c) 264 (d) 330

21. Given $\sin 45^\circ = \cos 45^\circ = \frac{1}{\sqrt{2}}$, $\sin 30^\circ = \frac{1}{2}$, $\cos 30^\circ = \frac{\sqrt{3}}{2}$, find $\sin 15^\circ$.
 (a) $\frac{\sqrt{6}}{4}$ (b) $\frac{\sqrt{6} - \sqrt{2}}{4}$ (c) $\sqrt{\frac{2}{3}}$ (d) $\frac{\sqrt{2} - 1}{3}$
22. If the sum of the first n terms of a sequence is $n^2 - n + 1$, find the 5th term.
 (a) 21 (b) 12 (c) 31 (d) 8
23. Solve $-3 < 5 - 3x \leq 11$. (a) $2\frac{2}{3} < x \leq -2$ (b) $-2 \leq x < 2\frac{2}{3}$ (c) $x \geq -2, x > 2\frac{2}{3}$ (d)
 $x \leq -2, x < 2\frac{2}{3}$
24. Find $\frac{dy}{dx}$ if $y = \frac{x}{x+1}$. (a) $\frac{x}{(x+1)^2}$ (b) $\frac{1}{(x+1)^2}$ (c) $\frac{x^2}{x+1}$ (d) $x(x+1)^{-1}$
25. A committee of two men and three women is to be formed from five men and four women. How many different committees can be formed?
 (a) 40 (b) 10 (c) 4 (d) 64
26. From the bag containing three red and four white balls, a ball is picked but not replaced. A second ball is then picked. Find the probability that the balls are of the same colour. (a) $\frac{1}{3}$
 (b) $\frac{9}{49}$ (c) $\frac{3}{7}$ (d) $\frac{1}{7}$
27. Which of these is a measure of central tendency? (a) Range (b) Standard deviation (c) Mode (d) Variance
28. The mean of the numbers 1, 3, x , y , 10, 15, where X and Y are positive integers, is 7. Find $x + y$. (a) 29 (b) 42 (c) 18 (d) 13
29. Simplify $\left[\sqrt{x} + \frac{1}{\sqrt{x}} \right]^2 - \left[\sqrt{x} - \frac{1}{\sqrt{x}} \right]^2$. (a) $2\sqrt{x}$ (b) $\frac{2}{\sqrt{x}}$ (c) 4 (d) $4\sqrt{x}$
30. If $23_x = 32_5$, find the value of X . (a) 7 (b) 6 (c) 5 (d) 4
31. The volume of a cube is 512cm^3 . Find the length of its side.
 (a) 6cm (b) 7cm (c) 8cm (d) 9cm
32. If $X = \{0, 2, 4, 6\}$, $Y = \{1, 2, 3, 4\}$ and $Z = \{1, 3\}$ are subsets of $U = \{x : 0 \leq x \leq 6\}$. Find $X \cap (Y' \cup Z)$. (a) $\{0, 2, 6\}$ (b) $\{1, 3\}$ (c) $\{0, 6\}$ (d) $\{ \}$
33. Evaluate $\int \sin 3x \, dx$.
 (a) $\frac{2}{3} \cos 3x + c$ (b) $\frac{1}{3} \cos 3x + c$ (c) $-\frac{1}{3} \cos 3x + c$ (d) $-\frac{2}{3} \cos 3x + c$
34. The derived dimension of energy is of the form $M^a L^b T^c$. What are the values of a , b and C , respectively? (a) -2, -1, 1 (b) 2, 1, -1 (c) 1, -2, 2 (d) 1, 2, -2
35. In freefall, an object of mass 2kg falls through a distance of 50m in 20s. How long would it take another object of mass 4kg to fall through the same distance?
 (a) 10s (b) 20s (c) 40s (d) 80s
36. The acceleration due to gravity on earth is 9.8ms^{-2} and 3.7ms^{-2} on mars. If the weight of an object on earth is 200N, what would be its weight on mars?
 (a) 74N (b) 54N (c) 24N (d) 20.4N
37. The displacement of a body is given by $y = 64t^4 + 8t^3 + 2t^2 + 5t$. Find its velocity after 0.5 seconds. (a) 14.8ms^{-2} (b) 6ms^{-2} (c) 4.8ms^{-2} (d) 16ms^{-2}

38. A thermometer indicates -50°C and 70°C at the lower and upper fixed points respectively. What temperature does the thermometer register when the true temperature is 66.7°C ? (a) 80°C (b) 50°C (c) 30°C (d) 20°C
39. As the tension in an elastic string is increased from 50N to 130N, the string extends by -0.1m. What is the work done in increasing the tension in the string? (a) 4J (b) 6J (c) 8J (d) 10J
40. Which of the following has the highest surface tension? (a) Cold water (b) Hot water (c) Oily water (d) Soapy water
41. What quantity of heat energy is required to completely evaporate 1kg of ice originally at 0°C ? [Specific latent heat of fusion of ice $=3.35 \times 10^5 \text{ Jkg}^{-1}$, specific latent heat of vaporization of water $=2.26 \times 10^6 \text{ Jkg}^{-1}$, specific heat of capacity of water $=4200 \text{ Jkg}^{-1}\text{K}^{-1}$]. (a) 750KJ (b) 3015KJ (c) 4050KJ (d) 5130KJ
42. Find the number of moles of chloride ions present in 50cm^3 of 0.200mol dm^{-3} calcium chloride. (a) 0.001 (b) 0.01 (c) 0.02 (d) 0.10
43. Which of these can be used as a drying agent? (a) Ammonium chloride (b) Barium hydroxide (c) Potassium tetraoxomanganate (VII) (d) Iron (III) chloride
44. Which of the following properties decreases across the period? (a) Electron affinity (b) Atomic radius (c) Electronegativity (d) Ionization energy
45. Which of the following processes is endothermic? (a) Burning of wood (b) Lighting a match stick (c) Reaction of acid and base (d) Dissolution of ammonium chloride in water
46. The percentage of water of crystallization in the compound $\text{C}_2\text{H}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ is..... [C=12, H=1, O=16]. (a) 28.57 (b) 38.57 (c) 48.45 (d) 58.57
47. The catalytic oxidation of ammonia can be represented by the equation $a\text{NH}_3 + b\text{O}_2 \rightarrow c\text{NO} + d\text{H}_2\text{O}$, where a , b , c and d are whole numbers. The values of a , b , c and d are respectively (a) 2, 1, 2, 3 (b) 2, 4, 2, 3 (c) 2, 4, 2, 4 (d) 4, 5, 4, 6
48. 10g of zinc was dissolved in excess tetraoxosulphate (VI) acid. Calculate the mass of hydrogen produced. (a) 0.5g (b) 0.31g (c) 0.8g (d) 14.3g
49. A liquid in a transparent bottle exposed to light was found to spontaneously produce a gas which rekindles a glowing splint. The liquid is (a) lime water (b) sodium peroxide solution (c) water (d) chloroform
50. Coal gas has a high calorific value but it is not preferred to methane gas for use in the home because it (a) is more expensive (b) is more difficult to store (c) is poisonous due to the presence of carbon (II) oxide (d) is more highly inflammable