How I scored 95th percentile on the NMAT
MY NMAT STUDY GUIDE

Made by: G.G. Alvero

Please follow me on...

**Instagram:** medfit137

**Blog:** https://medschooltodaydoktorbukas.wordpress.com/
Table of Contents
About my NMAT Experience ........................................3
Tips on how to use this study guide ...............................3
Tips on taking the NMAT ............................................3
Tips for Part 1 of the NMAT ........................................4

Part 2 Topics
Biology .......................................................................5
Chemistry ....................................................................17
Physics .......................................................................27
Social-Sciences ..........................................................34

Last few things ..........................................................43
About my NMAT Experience
I studied around 1 month for this exam. This guide is a product of my studying. The first thing I did was go through the sample exam. I then made rationale for each question which is what my study guide is based on. I reviewed this study guide over and over and over again. I ended up taking my NMAT in Los Angeles, California. It was a long day but this exam was doable! I am now in medical school at UERM M M M C I because I scored 95th percentile!!! You can do this too!

Tips on how to use this study guide
I suggest before you even read this study guide that you go through the practice exam first! Next you should review this study guide and look for YouTube videos to help you understand the concepts in this guide. Also visit my blog to see my other study resources which are links that will help with Part 1.

Tips on taking the NMAT
• Stay calm! I wasn’t very nervous even before but when I started the test I did have some jitters. So just take a deep breath and pray.
• Make sure you have a jacket. By the end of each part I thought I was overheating but do have a jacket on your chair just in case you get cold.
• Eat well before the test! My stomach was grumbling during part 1! 3 hours is long so make sure you have enough fuel in your body to get through the test.
• Have extra erasers. I actually had extra erasers for the first part so that I can cover up the wrong answers, this really helped me.
• Bring enough pencils. I had five I am glad I had a lot because with the way I write the pencil became dull fast. You don’t want to waste time sharpening your pencil.
• Have a watch!!!!! So when I took the NMAT there was not one clock to be found thank goodness I had a watch. I think its crucial for the first part. The proctors did tell you when you should move onto the next section. They had a guide on the wall suggesting that you take a certain amount of time for each part. However, if you are planning to go to different parts of the test you need to make sure you keep track of your own time too. I didn’t want to stress about knowing the time so I made sure to have a watch. At the end they do tell you when you have 20 mins, 10 mins, 5mins left.
• Pray and be kind. The experience of taking the NMAT wasn’t that bad. I prayed often as I waited to go into the room but I also talked to the other students who were taking the exam. They were very kind and it was nice to talk to them. I guess the other students are your "competition" but say hi or give a smile, remember that those other students are in the same boat as you!
Tips for Part 1 of the NMAT

This section was fine. Verbal was okay, I wasn’t sure about some of the analogies but I think I was just nervous at first. Then I got into a good flow during inductive reasoning. I completed the quantitative section which wasn’t that bad but there were some math questions I wasn’t sure about. Then into the perceptual acuity...I think the exam had a few mistakes in it but that’s okay I just kept going. No time to put my hand up. I had 5 minutes left and just went over some of the number/letter series questions I wasn’t sure about. It is important to just keep going even if you don’t know. Don’t waste time. I think practicing inductive reasoning was helpful. **The best way to prepare for this section is to practice- go onto google look up "inductive reasoning" or check out my earlier post which already has all the links you need! Check it out:** https://medschooltodaydoktorbukas.wordpress.com/2013/11/12/nmat-study-resources/
**Part 2: Biology:** If you know the definitions and concepts you will be fine.

1. **Function of Organelles**
   a. **Nucleus:** contains all DNA in animal cell
   b. **Nuclear envelope or membrane:** double phospholipid bilayer that surrounds nucleus and has pores for RNA to move out.
   c. **Nucleolus:** where rRNA is transcribed and the subunits of ribosomes are assembled
   d. **Rough endoplasmic reticulum:** flattened sacs with many ribosomes and synthesizes proteins
   e. **Golgi complex:** modifies and packages proteins for use in other parts of the cell
   f. **Lysosomes:** contain hydrolytic enzymes that digest substances
   g. **Smooth endoplasmic reticulum:** tubular, lipid synthesis and detoxification of drugs
   h. **Peroxisomes:** vesicles in cytosol involved in production and breakdown of hydrogen peroxide
   i. **Ribosome:** make proteins
   j. **Chromosomes:** part of nucleus and distinct during replication

2. **Cellular Filaments**
   a. **Cytoskeleton:** a network of filaments that determine the structure and motility of the cell
   b. **Microtubules:**
      i. larger than microfilaments
      ii. rigid hollow tubes made from tubulin
      iii. involved in flagella and cilia construction and spindle apparatus
   c. **Microfilaments:**
      i. squeeze membrane together in phagocytosis and cytokinesis
      ii. the contractile force in microvilli and muscle.
   d. **Flagella:** tail of sperm so it can move
   e. **Cilia:** are found only in fallopian tubes and respiratory tract of humans
   f. **Centrosome:** involved in cell division. Microtubules grow from it.
g. **Centrioles**: function in production of flagella and cilia, but not for microtubule production

3. **Cell Life Cycle**
   a. **G1**: usually the longest stage. Cell splits and grows.
   b. **S**: energy used for replicating DNA
   c. **G2**: cell prepares to divide
   d. **M**: Meiosis or Mitosis
   e. **C**: Cytokinesis- separation of the cellular cytoplasm due to constriction of microfilaments about the center of the cell

4. **Mitosis**: nuclear division with genetic change
   a. **Prophase**: condensation of chromatin into chromosomes
      i. Centrioles move to opposite ends of cell
      ii. Nucleolus and nucleus disappear
      iii. Spindle apparatus forms
   b. **Metaphase**: chromosome align at equator
   c. **Anaphase**: sister chromatids split and move toward opposite ends of cell
   d. **Telophase**: nuclear membrane reforms the nucleolus
   e. Result: 2 identical daughter cells

5. **Meiosis**: double nuclear division which produces 4 haploid gametes
   a. In humans: only spermatogonium and oogonium undergo meiosis
   b. **Prophase I**: homologous chromosomes line up alongside each other, matching their genes exactly. May exchange sequences of DNA (crossing over).
   c. **Metaphase I**: homologs move to metaphase plate, do not separate
   d. **Anaphase I**: homologs separate
   e. **Telophase I**: Nuclear membrane may or may not form. If cytokinesis occurs the cells are haploid with 23 chromosomes
   f. **Prophase II, Metaphase II, Anaphase II and Telophase II** look the same as Mitosis.
6. **Protein Synthesis**
   a. **DNA** – transcription - **mRNA** – translation - **Protein**
   b. **tRNA**: transfers specific amino acids to growing polypeptide chain during translation
   c. **mRNA**: conveys genetic information from DNA to the ribosome and is encoded in a sequence of nucleotides
   d. **nRNA**: ribonucleic acid found in the nucleolus of the cell
   e. **nucleic acid**: basic building block of DNA or RNA

7. **Glycolysis**: Anaerobic catabolism of glucose (6C) to pyruvic acid (3C x 2) which occurs in cytoplasm

8. **Fermentation**: glycolysis and reduction of pyruvate producing ethanol or lactic acid and NAD+

9. **Anaerobic Respiration**: absence of O2 result in 2ATP/mol of glucose

10. **Aerobic Respiration**: presence of O2 results in net 36ATP/mol of glucose

11. **Enzyme function**: act as a catalyst
    a. They are globular proteins
    b. Lower energy of activation and increase rate of reaction
    c. Are not consumed or altered by reaction
    d. Do not alter the equilibrium

12. **Enzyme inhibition**:
    a. **Competitive inhibitors**: compete with substrate by binding to active site
    b. **Noncompetitive inhibitors**: bind to enzyme in area other than active site
    c. **Allosteric inhibitor**: bind to enzyme and change configuration of enzyme
13. Eukaryotic vs. Prokaryotic Cells

<table>
<thead>
<tr>
<th></th>
<th><strong>Eukaryotic Cell</strong></th>
<th><strong>Prokaryotic Cell</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nucleus:</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Number of chromosomes:</td>
<td>More than one</td>
<td>One--but not true chromosome: Plasmids</td>
</tr>
<tr>
<td>Cell Type:</td>
<td>Usually multicellular</td>
<td>Usually unicellular (some cyanobacteria may be multicellular)</td>
</tr>
<tr>
<td>True Membrane bound Nucleus:</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Example:</td>
<td>Animals and Plants</td>
<td>Bacteria and Archaea</td>
</tr>
<tr>
<td>Genetic Recombination:</td>
<td>Meiosis and fusion of gametes</td>
<td>Partial, undirectional transfers DNA</td>
</tr>
<tr>
<td>Lysosomes and peroxisomes:</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Microtubules:</td>
<td>Present</td>
<td>Absent or rare</td>
</tr>
<tr>
<td>Endoplasmic reticulum:</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Mitochondria:</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Cytoskeleton:</td>
<td>Present</td>
<td>May be absent</td>
</tr>
<tr>
<td>DNA wrapping on proteins.:</td>
<td>Eukaryotes wrap their DNA around proteins called histones.</td>
<td>Multiple proteins act together to fold and condense prokaryotic DNA. Folded DNA is then organized into a variety of conformations that are supercoiled and wound around tetramers of the HU protein.</td>
</tr>
<tr>
<td>Ribosomes:</td>
<td>larger</td>
<td>smaller</td>
</tr>
<tr>
<td>Vesicles:</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Golgi apparatus:</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Chloroplasts:</td>
<td>Present (in plants)</td>
<td>Absent; chlorophyll scattered in the cytoplasm</td>
</tr>
</tbody>
</table>
## Animal vs Plant Cells

<table>
<thead>
<tr>
<th></th>
<th>Animal Cell</th>
<th>Plant Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell wall:</td>
<td>Absent</td>
<td>Present (formed of cellulose)</td>
</tr>
<tr>
<td>Shape:</td>
<td>Round (irregular shape)</td>
<td>Rectangular (fixed shape)</td>
</tr>
<tr>
<td>Vacuole:</td>
<td>One or more small vacuoles (much smaller than plant cells).</td>
<td>One, large central vacuole taking up 90% of cell volume.</td>
</tr>
<tr>
<td>Centrioles:</td>
<td>Present in all animal cells</td>
<td>Only present in lower plant forms.</td>
</tr>
<tr>
<td>Chloroplast:</td>
<td>Animal cells don't have chloroplasts</td>
<td>Plant cells have chloroplasts because they make their own food</td>
</tr>
<tr>
<td>Cytoplasm:</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Endoplasmic Reticulum (Smooth and Rough):</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Ribosomes:</td>
<td>Present</td>
<td>Present</td>
</tr>
</tbody>
</table>
15. Chemicals responsible for transmission in neurons:
   a. **Adrenaline/Epinephrine**: hormone and neurotransmitter that functions to regulate heart rate, breathing, and fight or flight response of sympathetic nervous system
   b. **Choline**: water soluble essential nutrient
   c. **Noradrenaline/Norepinephrine**: neurotransmitter released from the sympathetic neurons to affect the heart.
   d. **Acetylcholine**: Neurotransmitter in autonomic nervous system that acts on peripheral nervous system and central nervous system. Only neurotransmitter used in the motor division of somatic nervous system.

16. Plant Hormones
   a. Plants need auxin, cytokinin and ethylene for growth of lateral buds.
   b. **Auxin**: plant hormones that has role in coordination of growth and behavioral processes in plants life cycle.
   c. **Cytokinin**: plant growth substance that promotes cell division in plant roots and shoot. Involved in cell growth and differentiation.
   d. **Gibberellin**: plant hormones regulate growth and development processes including stem elongation, germination, dormancy, flowering sex expression, enzyme induction etc.
   e. **Ethylene**: Important natural plant hormone, used to ripen fruits.
17. Na+ and K+ Channels
   a. Outside the cell Na+ is high because 3 Na+ move out while 2 K+ moves into the cell.

18. Blood clotting stages
   a. Platelets rupture
   b. Prothrombin → thromboplastin/Ca++ → thrombin
   c. Fibrinogen → thrombin → fibrin
   d. Fibrin and erythrocytes form a hardened clot

19. Definitions
   a. **Hemolysis**: rupturing of erythrocytes and the release of their content into surrounding fluid
   b. **Plasmolysis**: process in plant cells where cytoplasm pulls away from cell wall due to loss of water through osmosis

20. Fatty acid breakdown
   a. **Beta-oxidation**: when fatty acid molecules are broken down in mitochondria to generate acetyl-coA.
   b. **Transamination**: chemical reaction between two molecules (amino acid containing amine (NH2) and a keto acid (=O). Amino acid becomes keto acid and keto acid becomes amino acid.
   c. **Pentose phosphate pathway**: process that generates NADPH and pentoses. This is an alternative to glycolysis. Primary role is anabolic and takes place in cytosol or in plastids of plants.

21. Veins vs. Arteries
   a. **Veins**: bring deoxygenated blood toward the heart
   b. **Arteries**: bring oxygenated blood away from the heart
   c. **Pulmonary Vein**: carries blood with highest concentration of oxygen
   d. **Renal Vein**: veins that drain the kidney. Connect the kidney to the inferior vena cava.
   e. **Pulmonary artery**: carries deoxygenated blood from heart to lungs
f. **Hepatic portal vein**: blood vessel that conducts blood from gastrointestinal tract and spleen to the liver.

22. **Brain parts**
   
a. **Medulla**: lower half of brainstem. Contains cardiac, respiratory, vomiting and vasomotor centers and deals with involuntary functions (breathing, heart rate and blood pressure).
   
b. **Cerebrum**: Contains cerebral cortex, functions in movement sensory processing, olfaction, language, communication, learning and memory
   
c. **Inferior pons**: ?
   
d. **Superior pons**: Establishes regularity of respiration

23. **Digestion**
   
a. **Mouth**: digestion begins here with alpha-amylase which is in saliva and digests carbohydrates.
   
b. **Esophagus**: no digestion occurs only peristalsis which move bolus
   
c. **Stomach**: mixes and stores food reducing it to chyme, protein digestion begins here.
      
   i. Mucus cells: secrete mucus
   
   ii. Chief cells: secrete pepsinogen and precursor for pepsin which begins protein digestion
   
   iii. Parietal cells: secrete HCl to lower pH of stomach and raise pH of blood. Also secrete intrinsic factor which helps ileum absorb B12.
   
   iv. G cells: secrete gastrin which stimulate parietal cells to secrete HCl
   
d. **Small intestine**: 90% of absorption and digestion occurs here
      
   i. Duodenum
   
   ii. Ileum
   
   iii. Jejenum
   
e. **Large intestine**: water and electrolyte absorption.
      
   i. Ascending colon
   
   ii. Transverse colong
   
   iii. Descending colon
   
   iv. Sigmoid colong
v. Rectum
vi. Anus

24. Hormones:

a. Anterior Pituitary
   i. Follicle-stimulating: follicle maturation; spermatogenesis
   ii. Luteinizing: ovulation; testosterone synthesis
   iii. Adrenocorticotropic (ACTH): stimulate adrenal cortex to make/secrete glucocorticoids
   iv. Thyroid: stimulating: stimulates thyroid to make hormones
   v. Prolactin: stimulate milk production/secretion
   vi. Endorphins: inhibit perception of pain
   vii. Growth hormone: bone/muscle growth

b. Hypothalamus store in posterior pituitary
   i. Oxytocin: uterine contraction and milk secretion
   ii. Vasopressin (ADH): water reabsorption in kidneys

c. Thyroid
   i. T3 and T4: metabolic activity
   ii. Calcitonin: decrease blood calcium level

d. Parathyroid: increase blood calcium level

e. Adrenal Cortex
   i. Glucocorticoids: increase blood glucose level and decrease protein synthesis
      ii. Mineralocorticoids: increase water reabsorption in kidneys

f. Adrenal medulla
   i. Epinephrine/Norepi: increase blood glucose level and heart rate

g. Pancreas
   i. Glucagon: convert glycogen to glucose in liver and increase blood glucose
   ii. Insulin: lowers blood glucose, increase glycogen stores
   iii. Somatostatin: Supress secretion of glucagon and insulin
h. Testes
   i. **Testosterone**: maintains male secondary sexual characteristics

   i. Ovary/Placenta
   i. **Estrogen**: maintains female secondary sexual characteristics
   ii. **Progesterone**: promotes growth/maintenance of endometrium

25. Plant growth
   a. **Thigmotropism**: plant moves or grows in response to touch or contact stimuli
   b. **Thermotropism**: plant moves in response to change in temperature
   c. **Heliotropism**: seasonal motion of plant parts in response to direction of the sun
   d. **Geotropism**: growth movement by plant in response to gravity
   e. **Phototropism**: growth of organisms in response to light
   f. How to test that photosynthesis is taking place? Put iodine on the plant

26. Applying things to one side of a plant
   a. **Lanolin pastes**: protects against ravages of climate and environment; This will cause the plant to bend toward the side without the paste

27. Short day plants vs Long day plants
   a. **Short-day**: flower when day lengths are less that critical photopeiod
   b. **Long-day**: flower when the day length exceeds their critical photoperiod

28. Definitions
   a. **Succession**: series of changes in an ecological community that occur over time after a disturbance
   b. **Seral stages**: successional stage of an ecosystem from a disturbed unvegetated state to a climax plant community
   c. **Microsere**: terminating by the loss of identity of the habitat and without the development of a climax
   d. **Biomes**: large naturally occurring community of flora and fauna occupying major habitat e.g. forest or tundra
29. Biomes
   a. **Tundra**: extremely cold climate, with few plants and animals. Makes up 1/5th of earth’s land surface.
   b. **Desert**: Very hot and dry with little rain
   c. **Taiga**: swampy coniferous forest of high northern latitudes.
   d. **Rainforest**: Hot, humid with equatorial climate and biggest biodiversity. Almost half of the world’s species live there.
   e. **Savannah/Tropical grasslands**: hot and dry, mainly grass, scrub and some trees. Two distinct seasons: dry season and rainy season.

30. Ocean Zones
   a. **Abyssal**: depths or bed of the ocean between 3000 and 6000 meters down
   b. **Neritic**: the belt or region of shallow water adjoining the seacoast
   c. **Pelagic**: any water in a sea or lake that is neither close to the bottom nor near the shore
   d. **Littoral**: part of sea, lake or river that is close to the shore. Exposed during low tide and covered during high tide.

31. Definition
   a. Ecology: study of interactions among organisms and their environment
   b. Kingdom
   c. Phylum
   d. Class
   e. Order
   f. Family
   g. Genus
   h. Species: organisms that can reproduce fertile offspring with each other
   i. Community: organized collection of interacting species

32. Population activities
   a. **Survival of the fittest**: predicts that one species will exploit the environment more efficiently, eventually leading to the extinction of the other with the same niche
(a) **R-selection**: producing large numbers of offspring that mature rapidly with no parental care (high mortality rate)

(b) **K-selection**: small number of offspring, slow maturation and strong parental care

(c) **Speciation**: process by which a new species is formed

(d) **Adaptive radiation**: occurs when several separate species arise from a single ancestral species

(e) **Evolutionary bottleneck**: species may face a crisis so severe as to cause a shift in allelic frequencies of the survivors of the crisis

(f) **Divergent evolution**: exists when two or more species evolving from the same group maintain a similar structure from the common ancestor

(g) **Convergent evolution**: two species independently evolve similar structures

(h) **Polymorphism**: occurrence of distinct forms

(i) **Symbiosis**: relationship between two species

   (i) Mutualism: beneficial for both

   (ii) Commensalism: beneficial for one and not affect the other

   (iii) Parasitism: beneficial for one and detrimental to the other
Part 2: Chemistry: Review this guide and also youtube the concepts so you can understand better.

1. **Catalyst**: substances that increases the rate of a chemical reaction without being used up in the process
   a. **Electrolyte**: liquid or gel which contains ions and can be decomposed by electrolysis
   b. **Oxidant**: causes a gain of electrons and is reduced in a chemical reaction
   c. **Reductant**: causes a loss of electrons and is oxidized in a chemical reaction
   d. **To be reduced**: to gain electrons
   e. **To be oxidized**: to lose electrons
   f. **Indicator**: substance that undergoes a distinct observable change when conditions in its solution change.

2. **Periodic Table**
   a. IA: Alkali Metals (+1 charge)
   b. IIA: Alkali earth metals (+2 charge)
   c. IIIA: Semi metal and basic metals (+3 charge)
   d. IVA: non metal, semi metal, basic metal (+/-4)
   e. VA: non metal, semi metal, basic metal (+3)
   f. VIA: Chalcogens (-2)
   g. VIIA: Halogens (-1)
   h. VIIIA: Noble gases (0)

3. **Periodic Table patterns**
   a. Effective charge, ionization energy, electronegativity and electron affinity
      i. From left to right it increases
      ii. From bottom to top it increases
   b. Atomic radius
      i. From left to right it decreases
      ii. From bottom to top it decreases
4. Group 2 elements: Be, Mg, Ca, Sr, Ba, Ra
   a. Ra has the lowest ionization potential
   b. Ca is bigger than Mg
   c. They have relatively low electronegativities
   d. NOT TRUE: Be is most active metal among them.

5. Definitions
   a. **Unsaturated:** chemical solution in which the solute concentration is lower than its equilibrium solubility
   b. **Saturated:** point of maximum concentration, in which no more solute may be dissolved in a solvent
   c. **Supersaturated:** liquid that has a substance added until no more of the substance can be absorbed by the liquid.
   d. **Diluted:** a solution containing a relatively small amount of solute as compared with the amount of solvent

6. **PV=nRT (MEMORIZE)**
   a. To find the volume inside a balloon figure out the volume for each given temperature then subtract them. That should be the volume inside the balloon.

7. Comparing molarities
   a. **Normality = molarity x total positive oxidation number**
   b. **Molarity = normality/total positive oxidation number**
      i. 6N H3PO4 = 6/3 = 2M
      ii. 4N Ca(OH)2 = 4/2 = 2M
      iii. 8N HC2H3O2 = 8/1 = 8M
      iv. 2N NH4OH = 2/1 = 2M

8. Bonding is ionic for compound with the greatest electronegative difference.

9. Fats: source of Energy in times of prolonged hunger and insulate body against loss of heat
10. Units of Concentration (MEMORIZE- you will be faster at answering the questions)
   a. **Molarity** = mol/L
   b. **Normality** = # of gram equivalent weights of solute / liter of solution
   c. **Molality** = # of mol of solute / liter of solution
   d. **Mole fraction** = # of mol of compound / total # moles in system
   e. **Percent composition by mass**: (mass of solute / mass of solution) x 100

11. Bonds- Strongest to weakest
   a. **Covalent bond**: chemical bond that involves sharing of electron pairs between atoms (CH4)
   b. **Ionic bond**: formed through electrostatic attraction between two oppositely charged ions (NaCl)
   c. **Metallic bonding**: between metals only
   d. **Hydrogen bond**: A bond with N, O, F
   e. **Dipole-dipole**: force that exists because of interaction of dipoles on polar molecules in close contact
   f. **London dispersion**: dipole-dipole moments

12. What is the normality of an acid solution if 50mL of the solution requires 48.61mL of 0.1879 N alkali for neutralization?
   a. 
   i. **(volume)(normality) = (volume)(normality)**
   ii. **N = (48.61mL x 0.1879N)/50mL**
   iii. N = 0.1827

13. A substance that floats in water has a lower density than water (1g/mL=1000kg/L)

14. Element with three naturally occurring isotopes of masses 23.9924 24.9938 and 25.9898. These have abundances of 78.6%, 10.1% and 11.3% respectively. What is the average atomic mass of this element?
   a. 
   (23.9924 x 0.786) + (24.9938 x .101) + (25.9898x .113)
b. \[ 18.86 + 2.52 + 2.94 = 24.32 \text{g} \] is the average atomic mass of this element

15. Oxides of non-metals with water form acids while oxides of metals with water form bases.

a. Anything metal oxide is basic (CaO, BaO, MgO)

b. Anything non-metal is acidic like CO2

16. Look at table and find which two samples are of the same compound

a. Look for the sample that is the multiple of another sample

17. Fifty-four grams of a certain metal at 98 Celsius was placed into 80 ml of water at 297 K.

Assuming no heat is lost to the surrounding, what is the temperature of the water and the metal? Specific heat of metal =0.085 cal/g Celsius

Let \( T_f \) be the final temperature to be found:

\[
(0.085 \text{ cal/g } ^\circ\text{C}) \times (54 \text{ g}) \times (98 - T_f)^\circ\text{C} = \text{ cal lost by the metal}
\]

\[
(1.00 \text{ cal/g } ^\circ\text{C}) \times (80 \text{ g}) \times (T_f - (297 \text{ K } - 273 \text{ K})) = \text{ cal gained by the water}
\]

Set the two heat values equal to each other:

\[
(0.085 \text{ cal/g } ^\circ\text{C}) \times (54 \text{ g}) \times (98 - T_f)^\circ\text{C} = (1.00 \text{ cal/g } ^\circ\text{C}) \times (80 \text{ g}) \times (T_f - (297 \text{ K } - 273 \text{ K}))
\]

Solve for \( T_f \) algebraically:

\[
449.82 - (4.59 \times T_f) = (80 \times T_f) - 1920
\]

\[
449.82 + 1920 = (80 \times T_f) + (4.59 \times T_f)
\]

\[
2369.82 = 84.59 \times T_f
\]

\[
T_f = 2369.82 / 84.59 = 28^\circ\text{C}
\]

Specific heat of water: 1 cal/g°C = 4.186 J/g°C

18. Graham’s Law (MEMORIZE)

a. \( \frac{r_1}{r_2} = (\frac{MM_2}{MM_1})^{1/2} \) MM= molar mass

19. \( PV = nRT \) (This is the second time you’ve seen this. They are likely to ask questions that require this equation)

20. In every chemical reaction of Substance A, the sum of the weights of the products formed is greater than the initial weight of A which undergoes a reaction. Substance X in turn undergoes a chemical reaction in which the combined weight of the products is exactly equal to the initial weight of X which reacted.

a. Substance A is a pure compound
b. Substance X is a mixture

21. Compounds are made up of molecules of at least two different elements

22. Electric configuration
   a. E.g. Cl+1 (Atomic number of 17)
      i. Since has a charge of +1, will only have 16 in the electronic configuration
      ii. 1s²2s²2p⁶3s²3p⁴

23. Combination of equivalent amounts of acids and bases is: neutralization
   a. Precipitation: product of condensation of atmospheric water vapour that falls under gravity
   b. Hydrolysis: cleavage of chemical bonds by addition of water
   c. Ionization: process by which an atom or molecule acquires a negative or positive charge by gaining or losing electrons.

24. Volume x normality = volume x normality
   a. Just solve for the unknown and make sure the units are the same

25. Problem solving

26. Adding a non-volatile solute to a solvent
   a. Higher boiling point and lowers the freezing point

27. How many grams of water must be added to 200mL of NaOH solution in order to have a solution with a specific gravity of 1.157, 13.55%? (Specific gravity of NaOH = 1.32, 28.83%)

28. M₁V₁=M₂V₂
   a. Make sure all units are the same!!!!!! Don’t get tricked.
   b. If adding or diluting something make sure the volume is the total volume
Endothermic vs. Exothermic

   c. Endothermic: energy is a reactant (+H)
   d. Exothermic: energy is a product (–H)

30. Change in internal energy of a system will be equal to the change in enthalpy of the system when the system absorbs heat while expanding to a vacuum.

31. A carcinogenic air pollutant from automotive sources and cigarette smoke is benzopyrene
   a. Aflatoxin: naturally occurring mycotoxins that are produced by a species of fungi
   c. Urethane: Colorless or white crystalline compound used in organic synthesis and formerly as palliative treatment for leukemia.

32. How many grams of NaOH is dissolved in 200mL of a 1M solution?

33. Organic compound:
   a. NOT soluble in water
   b. Soluble in ethanol
   c. Combustible
   d. Low melting point (10°C)

34. Finding the molecular formula of a compound
   a. Look at the answers and just find the one that has the correct molecular weight

35. Limiting reagent in the reaction is the one there is less of in the reactants

36. NaNO₂
a. Component of curing salts which preserves meat
b. Acts as a color fixative
c. Mutagenic effect

37. Endothermic vs Exothermic graph

38. Decreasing conductivity: largest Ki to smallest Ki

39. Ortho, Para, Meta directors
   a. Benzene- weakly activating ortho/para directing
   b. Phenolic group- strongly activating ortho/para directing
   c. Nitric acid- deactivating meta directing

40. Reaction between Grignard reagent and carbon dioxide.

41. Compound resulting from reduction of nitro compound: Amine (NH₂R, NHR₂, NR₃)
   a. Imine     Imide     Enamine
42. Different configurations: Trans vs. Cis and E vs. Z

![Steric repulsion diagram](image)

43. Have hydrogen bonding
   a. Diethyl ether
   b. Acetone
   c. Methanol

44. To know a description of a molecular formula C₆H₁₀ draw it out
   a. It has a ring and double bond

45. A liquid C₆H₁₂O₂, was hydrolyzed with water and acid to give an acid A and an alcohol B. Oxidation of B with chromic acid produced A. The formula of the original compound is:

46. Be able to identify acids and bases
   a. C₂H₅OH- base
   b. CH₃OCH₃- based
   c. CH₃CH₂COOH- acid
   d. CH₃COCH₃- based

47. Example of a carbohydrate: (C₆H₁₀O₅)x
48. Hybrid orbitals

<table>
<thead>
<tr>
<th>Regions of Electron Density</th>
<th>Arrangement</th>
<th>Hybridization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>linear</td>
<td>$sp$</td>
</tr>
<tr>
<td>3</td>
<td>trigonal planar</td>
<td>$sp^2$</td>
</tr>
<tr>
<td>4</td>
<td>tetrahedral</td>
<td>$sp^3$</td>
</tr>
<tr>
<td>5</td>
<td>trigonal bipyramidal</td>
<td>$sp^3d$</td>
</tr>
<tr>
<td>6</td>
<td>octahedral</td>
<td>$sp^3d^2$</td>
</tr>
</tbody>
</table>

49. Types of reactions
   a. Substitution: $AB + CD \rightarrow AC + BD$
   b. Synthesis: two or more simple compounds combine to form a more complicated compound
   c. Cracking: when a compound splits into different products
   d. Polymerization: process of reacting monomer molecules together in a chemical reaction to form a polymer
e. Combustion: where oxygen combines with another compound to form water and carbon dioxide. Exothermic reaction because produce heat.

50. Largest dipole moment: Cis ClCH=CHCl

a. The more right something is on the periodic table is the direction the dipole goes towards.
Part 2: Physics: To do well in physics MEMORIZE the equations/formulas!

1. Kinematics
   a. Velocity = distance/time (m/s)
   b. Distance = velocity x time (m)
   c. Time = distance/time (s)

   a. \( F = \frac{(Gm_1m_2)}{r^2} \)
   b. Factors that determine speed of a satellite moving in stable orbit around a planet: orbital radius (r), mass of the planet and gravitational constant (G)

3. Devices- know what they look like
   a. Galvanometer: instrument for detecting electric current
   b. Generator: device that converts mechanical energy to electrical energy
   c. Transformer: static electrical device that transfers energy by inductive coupling between its winding circuits.
   d. Rectifier: electrical device that converts alternating current (reverses direction) to direct current which flows in only one direction.

4. 2 objects dropped at the same height and time has the same velocity at halfway.

5. \( F= ma = mg \)
   a. To find the angle a string makes with the horizontal
      i. Calculate the F for each direction: the weight and the horizontal push
      ii. Divide the horizontal push by the weight. The value you get is the angle from the vertical. Subtract 90 degrees and the angle of the vertical to get the angle from the horizontal.

6. To find the pulley system efficiency
   a. Calculate the Work= \( F(\text{Newtons})d \) of the input and output
   b. Divide the work output by the work input and multiply by 100
7. Draw out the problem
   a. Make note of the weights: if one double the weight of the other, the heavier one will move half of what the lighter weight will move.

8. KE of object at the highest point becomes PE
   PE changes to KE when object is falling
   PE is at its maximum at the objects highest point

9. Bernoulli’s principle: \( A_1v_1 = A_2v_2 \)
   a. If the diagram shows that the next part branches, to find either variable (A2 or V2) just make both sides equal.

10. Acceleration is the rate of change of an object’s velocity \( (a = \frac{v}{t}) \)
    a. In a graph that has a slope equal at each point there is no acceleration because the velocity is constant.

11. Specific Heat = \( Q = mcT \) (joules or calories)
    a. \( m \) = mass
    b. \( c \) = specific heat \( (J/g°C) \)
    c. \( T \) = change in temperature

12. Heat transfer
    a. Conduction: direction transfer of energy via molecular collisions
    b. Convection: transfer of heat by physical motion of the heated material (only liquids and gases)
    c. Radiation: transfer of energy by electromagnetic waves

13. Specific Heat = \( Q = mcT \)
    a. Specific heat of water = 4.19 J/g°C
    b. 1 cal = 4.19 Joules

    a. To find the time use \( Q = mcT \) which gives Joules
b. Power = W/t; t=W/P

c. Plug in the numbers and get time

15. \( PV = nRT \)

16. When a glass flask is filled with water then heated, then taken off the heat and tightly stoppered immediately, then has cold water poured over the flask it will result in boiling again since the condensation of the steam reduces the pressure inside.

17. Carnot refrigerator question*** Need to figure out!

18. \( Q = mcT \)

   a. The answer will be in joules therefore convert to cal by dividing by 4.19

19. Immediate source of water which forms dew on grass on a summer morning is the air

20. Look at specific heat, the higher the number the greater amount of heat it needs to raise the temperature of its unit mass by one degree.

21. Know units for

   a. Density = mass/volume
   
   b. Specific heat capacity = \( \frac{J}{g\degree C} = 1 \text{ cal/gK} \)
   
   c. Thermal conductivity = Watts/mK
   
   d. Specific latent heat = Joule/kg

22. In hydroelectric plants, electric energy is generate by making use of the power of a waterfall

23. Power (watts) = \( IV = \frac{V^2}{R} = \frac{I^2}{R} \)

   a. I = current = amp
   
   b. R = resistance = ohm
   
   c. V = volts
24. **Ohm’s Law: V=IR**

25. **Capacitance = Q/V = coloums/volts** it is the ability to store charge per unit voltage

<table>
<thead>
<tr>
<th>10</th>
<th>deci  d</th>
<th>10</th>
<th>milli  m</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>centi  c</td>
<td>10</td>
<td>micro  µ</td>
</tr>
<tr>
<td>10</td>
<td>milli  m</td>
<td>10</td>
<td>nano  n</td>
</tr>
<tr>
<td>10</td>
<td>giga  G</td>
<td>10</td>
<td>kilo  k</td>
</tr>
<tr>
<td>10</td>
<td>mega  M</td>
<td>10</td>
<td>hecto  h</td>
</tr>
<tr>
<td>10</td>
<td>kilo  k</td>
<td>10</td>
<td>deka  d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. **Power (watts) = IV = V^2/R = I^2/R**

27. Electroplating results in a better quality product by applying a relatively moderate current for a longer time.

28. **Faraday’s Law: Emf = N(magnetic flux/time)**
   a. N= number of turns
   b. Magnetic flux = external magnetic field x area of coil = BA
   c. Units: volts
   d. Faraday’s law summarizes the ways voltage can be generated

29. Series vs Parallel Equations
   a. **Series**
      i. R = R + R
      ii. V = V + V
      iii. I = I + I
      iv. 1/C = 1/C + 1/C
   b. **Parallel**
      i. 1/R = 1/R + 1/R

---

MADE BY: G.G. ALVERO

Page 30 of 43

STUDY HARD. DO YOUR BEST. PRAY.
ii. \( V = V = V \)

iii. \( I = I + I \)

iv. \( C = C + C \)

30. **Dielectric material** is an electrical insulator that can be polarized by an applied electric field.

   a. When a dielectric is placed in electric field, electric charges do not flow through the material as they do in a conductor, but only slightly shift from their average equilibrium positions causing dielectric polarization.

31. No image will be projected on the screen if an object is placed between the focal point and lens.

32. A lemon is colored yellow because it reflects only yellow light.

33. Appearance of a rainbow in the sky after a rainstorm is due to raindrops acting as prisms that separate sunlight into its components.

34. Transmitting waves is due to energy.

   a. Amplitude = change over a single period, the highest point of the wave

   b. Wavelength = velocity/frequency

   c. Frequency = \( 1/T = 1/\text{Period} = \text{velocity/wavelength} \)

   d. Period = \( 1/frequency \)

35. If a boy stands in front of two mirrors standing at 45 degree angle to each other he will see 7 images.

   a. The mirrors will make as many images as needed to complete a 360 degree circle, including the original object.

   b. 360 degrees = circle

   c. Take the angle have divide 360/angle

   d. If 45 degrees 360/45 = 8, subtract one because that is the position of where the object/boy is.

36. If the number of lines in a diffraction grating of a given width is increased, the spectrum produced will be broader.
37. Optics Equation
   a. \( \frac{1}{f} = \frac{1}{o} + \frac{1}{i} \)
   b. \( hi/ho = -di/do \)
   c. (-) = inverted  (+) = erect

38. Wavelengths- from longer to shorter
   a. Radiowaves, Microwaves, Infrared waves, Red, orange, yellow, green, blue, indigo, Violet, Ultraviolet, X-rays, Gamma rays

39. When waves are refracted speed is changed.

40. To get the greatest amount of reflected sunlight from a concave mirror food should be placed at the focus of the mirror.

41. Decay particles
   a. Alpha: \(^{4}_2\)He
   b. Beta minus: \(^{0}_{-1}\)e- (actually add)
   c. Beta plus: \(^{0}_{+1}\)e+ (actually subtract)

42. When a large atom such as \(^{235}_92\)U splits into two smaller atoms, then the combined mass of the products resulting from the splitting will be the same as the original mass.

43. Gamma particle is high energy x-ray and doesn’t change the element.

44. Kinetic Energy = \( \frac{1}{2}mv^2 \)
   a. Electron mass: \( 9.1 \times 10^{-31} \) kg
   b. Neutron mass: \( 1.6 \times 10^{-27} \) kg
   c. Proton mass: \( 1.6 \times 10^{-27} \) kg
   d. Speed of light: \( 3 \times 10^8 \) m/s

45. \( E=mc^2 \) implies that relatively large amounts of energy can be obtained from relative small amounts of matter.
46. Electrons go towards the positive because it is negatively charged.

47. Isotopes
   a. Radioactive isotopes can be produced in the laboratory
   b. Radioactive isotopes decay by the emission of particles from nucleus
   c. There is a wide variety of decay rates for radioactive isotopes
   d. NOT TRUE: all isotopes are radioactive

48. Protons vs. Electrons
   a. All protons have the same charge
   b. Protons and electrons have charges equal in magnitude although opposite in sign
   c. The positive charge in an atomic nucleus is due to the protons it contains
   d. NOT TRUE: protons and electrons have equal masses

49. Problem solving question
   a. If the radiation of a sample of Krypton-85 decreases to 1/3 of the original intensity in a period of 18 years. What would the intensity after 18 more years be?
      i. 1st 18 years = 1/3 Intensity
      ii. 36 years = 1/9 intensity

50. In a U\textsuperscript{235} fission, represented by the equation, Xe\textsuperscript{140} and Sr\textsuperscript{94} nuclei are produced and energy is released. How many n is(are) given off in the process?
   a. \textsuperscript{235}U + \textsuperscript{1}n \rightarrow \textsuperscript{140}Xe \textsuperscript{84} + \textsuperscript{94}Sr + (?)\textsuperscript{1}n + energy
   b. 2 n are given off
Part 2: Social Sciences: Know the definitions!

1. **Sociology**: study of human groups, their customs and institutions and their development at all times and places

2. **Enculturation**: the process of learning to become a responsible adult member of a society as defined by the norms of that society. It is shown when people talk, act and think is acceptable ways

3. **Proverbs**: a short, well-known saying, stating a general truth or piece of advice

4. **Open-class Society**: Social status of a person is achieved through their effort not on their family background, ethnicity, gender or religion.

5. **Folkways**: norms for routine or casual interaction. Ex. Appropriate greeting and proper dress in different situations. Draw a line between right and rude.

6. **Values**: culturally defined standards held by human individuals or groups about what is desirable, proper, beautiful, good or bad that serve as broad guidelines for social life.

7. **Norms**: patterns of beliefs that serve to guide, control and regulate conduct

8. **Mores**: norms that are widely observed and have great moral significance. Distinguish between right and wrong.

9. **Deviant act**: actions or behaviors that violate social norms

10. **Diffusion**: spread of cultural traits from one sociocultural system to another

11. **Innovation**: human action out of the ordinary/unique/unprecendented

12. **Invention**: unique or novel device, method, composition or process.

13. **Max Weber** - proposed a theory of authority
   
   a. **Charismatic authority**: found in a leader who mission and vision inspire others. Leader of a new social movement and one instilled with divine or supernatural powers such as a religious prophet. Favored by Weber
b. **Traditional authority**: Ability and right to rule is passed down via heredity. It does not change overtime, does not facilitate social change, tends to be irrational and inconsistent.

c. **Functional authority**: the right which is delegated to an individual or department to control specified processes, practices, policies or other matters relating to activities undertaken by persons in other departments.

d. **Legal authority**: fosters belief in competence of the individual discharging statutory obligation

14. **Endogenous**: having internal cause of origin

15. **Marxist’s Model**: socio-economic and political worldview or inquiry based on a materialist interpretation of historical development a dialectical view of social transformation, an analysis of class-relations and conflict within society.

   a. **Major criticism**: overemphasis on importance of economic class to explain historical trends

16. **Sanction**: A reward for conformity or a punishment for nonconformity that reinforces socially approved forms of behavior

17. **Institution**: any structure of mechanism of social order and cooperation governing the behavior of a set of individuals within a given community

18. **Kinship**: The network of social relationships which link individuals through common ancestry, marriage or adoption.

19. **Subculture**: A group within the broader society that has values, norms and lifestyle distinct from those of the majority

20. **Community**: A group of people who share a common sense of identity and interact with one another on a sustained basis

21. **Pepinsky**: effective form of social control among Chinese communists is by group manipulation of guilt and shame.

22. **Bureaucracy**: A formal organization marked by a clear hierarchy of authority, the existence of written rules of procedure, staffed by full-time salaried officials, and striving for the efficient attainment of organizational goals.
23. **Primary function of religion in human societies**: establish orderly relationship between man and surroundings

24. **Primary groups**: small social group whose members share close, personal, enduring relationships.

25. **Secondary groups**: interact on a less personal level than primary, and relationships are temporary rather than long lasting. Established to perform functions and people’s roles are interchangeable.

26. **Fascist system**: form of radial authoritarian nationalism. Unify nation through totalitarian state that promoted mass mobilization of national community. View political violence, war and imperialism as means to achieve national rejuvenation and asserts that stronger nations have the right to expand their territory by displacing weaker nations.

27. Caste System vs Class System
   a. **Caste system**: form of social stratification characterized by hereditary transmission of style of life which often includes an occupation, ritual status in hierarchy and customary social interaction and exclusion based on cultural notions of purity and pollution.
   b. **Class system**: people are grouped into a set of hierarchical social categories, the most common being upper, middle and lower classes.

28. **Stereotypes**: A rigid and inflexible image of the characteristics a group.
   a. People initially interact with them rather than a true person

29. **Discovery**: initial awareness of existing but unobserved elements of nature

30. **Clairvoyance**: ability to gain information about an object, person, location or physical event through means other than the known human senses.

31. **Psychokinesis**: supposed ability to move objects by mental effort alone

32. **Precognition**: foreknowledge of an event especially as a form of extrasensory perception

33. **Telepathy**: supposed communication of thoughts or ideas by means other than the known senses
34. **Fixation:** concept originating from Sigmund Freud. It is the state in which becomes obsessed with an attachment to another person, being or object.

35. **Identification:** psychological process whereby the subject assimilates an aspect, property or attribute of the other and is transformed, wholly or partially after the model the other provides.

36. **Repression:** to repel one’s own desires and impulses towards pleasurable instincts by excluding the desire form one’s consciousness and holding or subduing it in the unconscious.

37. **Regression:** defense mechanism leading to temporary or long-term reversion of the ego to an earlier stage of development rather than handling unacceptable impulses in a more adult way.

38. **Illusion:** distortion of the senses, revealing how the brain normally organizes and interprets sensory stimulation.

39. **Hallucination:** perception in the absence of apparent stimulus which has qualities of real perception.

40. **Auditory imagery:** form of mental imagery that is used to organize and analyze sounds when there is no external auditory stimulus present.

41. **Eidetic imagery:** The Eidetic Image has been identified in psychological literature as a vision, as a source for new thought and feeling, as a material picture in the mind which can be scanned by the person as he would scan a real current event in his environment.

42. **Affective disorder/Mood disorder:** psychological disorder characterized by elevation or lowering of a person’s mood, such as depression or bipolar disorder.

43. **Panic reaction:** an acute overwhelming attack of fear or anxiety producing personality disorganization that may persist.

44. **Generalized anxiety:** an anxiety disorder characterized by chronic free-floating anxiety and such symptoms as tension or sweating or trembling or lightheadedness or irritability etc that has lasted for more than six months.

45. **Schizophrenia:** a long-term mental disorder of a type involving a breakdown in the relation between thought, emotion, and behaviour, leading to faulty perception, inappropriate actions and feelings, withdrawal from reality and personal relationships.
into fantasy and delusion, and a sense of mental fragmentation.

46. **Dopamine**: neurotransmitter - chemical released by nerve cells to send signals to other nerve cells.

47. **Enkephalin**: involved in regulating nociception (pain) in the body.

48. **Epinephrine**: many functions in body, regulating heart rate, blood vessel and air passage diameters. Crucial part of fight or flight response.

49. **Thorazine/Chlorpromazine**: synthetic drug used as a tranquillizer or sedative

50. **Percept**: an object of perception; something that is perceived

51. **Subliminal**: below the threshold of sensation or consciousness

52. **Threshold**: magnitude or intensity that must be exceeded for a certain reaction

53. Piaget’s stages of cognitive growth
   
   a. **Sensorimotor**: birth through 18-24 months - only aware what is immediately in front of them. They focus on what they see, what they are doing and physical interactions with their immediate environment
   
   b. **Preoperational**: Toddlerhood to childhood (7) - Think about things symbolically. Their language becomes more mature and develop memory and imagination which allows them to understand the difference between past and future.
   
   c. **Operational**: ages 7-12 - demonstrate logical and concrete reasoning. Thinking becomes less egocentric and increasingly aware of external events.
   
   d. **Formal operational**: adolescence through adulthood - able to logically use symbols related to abstract concepts

54. **Von Restorff effect**: aka isolation effect, predicts that an item that “stands out like a sore thumb” is more likely to be remembered than other items.
55. **Zeigarnik effect**: people remember uncompleted or interrupted tasks better than completed tasks.

56. **Greenspoon effect**: experimental effect found in some studies of verbal conditioning in which the speaker’s use of certain classes of words may increase in frequency when reinforced by the listener making appropriate diffident gestures of assent.

57. **Muller-Lyer illusion**: optical illusion consisting of stylized arrow.

58. **Gestalt Principle of perceptual organization**: brain is holistic, parallel and analog with self-organizing tendencies.
   a. **Proximity**: objects or events that are near to one another are perceived as belonging together as a unit
   b. **Continuation**: there is innate tendency to perceive a line as continuing its established direction
   c. **Closure**: innate tendency to perceive incomplete objects as complete and to close or fill gaps and to perceive asymmetric stimuli as symmetric
   d. **Common fate law**: aspects of perceptual field that move or function in a similar manner will be perceived as a unit
   e. **Similarity law**: parts of a stimulus field that are similar to each other tend to be perceived as belonging as a unity

59. Loving parent who is firm and consistent produces a competent and self-reliant child.

60. Man’s impulses most frequently conflict with moral standards of society: sex and aggression

61. **Selective attention**: being able to focus one’s auditory attention on a particular stimulus while filtering out a range of other stimuli

62. **Sensory adaptation**: change over time in the responsiveness of sensory system to a constant stimulus

63. **Just noticeable difference**: Smallest detectable difference between a starting and secondary level of particular sensory stimulus

64. **Roger’s Self Theory**: Roger’s rejected the deterministic nature of psychoanalysis and behaviorism and maintained that we behave as we do because of the way we perceive our situation. Believed that humans have one basic motive, that is the tendency to self-actualize-
fulfill one’s potential and achieve the highest level of human-beingness we can.

65. **Negative transfer:** the obstruction of or interference with new learning because of previous learning.

66. **Spontaneous recovery:** phenomenon of learning and memory which was first seen in classical conditioning and refers to a re-emergence of a previously extinguished conditioned response after a delay.

67. **Operant conditioning:** conditioning in which an operant response is brought under stimulus control by virtue of presenting reinforcement contingent upon the occurrence of the operant response.

68. **Stimulus generalization:** transfer of a response learned to one stimulus to a similar stimulus

69. **Phobias:** an extreme or irrational fear of or aversion to something

70. **Classical conditioning:** learning process that occurs when two stimuli are repeatedly paired: a response which is first elicited by the second stimulus is eventually elicited by the first stimulus alone

71. **Desensitization:** process of reducing sensitivity

72. **Modeling:** for of learning where individuals ascertain how to act or perform by observing another individual

73. **Diffusion of responsibility:** sociopsychological phenomenon whereby a person is less likely to take responsibility for action or inaction when others are present (e.g. being in a public place).

74. **Problem with experimental research in psychology:** Demand characteristics, hawthorne effect and halo effect.

75. **Demand characteristics:** experimental artifact where participants form an interpretation of the experiment’s purpose and unconsciously change their behavior to fit that interpretation.

76. **Hawthorne effect:** the alternation of behavior by the subjects of a study due to their awareness of being observed
77. **Halo effect**: tendency for an impression created in one area to influence opinion in another area

78. **Random assignment**: experimental technique for assigning subjects to different treatments.

79. **Heuristic availability**: mental shortcut that relies on immediate examples that comes to mind.

80. **Gestalt therapy**: psychotherapeutic approach that focuses on insight into gestalts in patients and their relations to the world, and often uses role playing to aid the resolution of past conflicts.

81. **Reality therapy**: approach to psychotherapy and counseling. Focuses on realism, responsibility and right-and-wrong, rather than symptoms of mental disorders.

82. **Psychoanalysis**: system of psychological theory and therapy which aims to treat mental disorders by investigating the interaction of conscious and unconscious elements in the mind and bringing repressed fears and conflicts into the conscious mind by techniques such as dream interpretation and free association.

83. **Behavior therapy**: the treatment of neurotic symptoms by training the patient’s reactions to stimuli

84. **Client-centered therapy**: developed by Carl Rogers in which the client determines the focus and pace of each session.

85. **Rational emotive therapy**: comprehensive, active-directive, philosophically and empirically based psychotherapy which focuses on resolving emotional and behavioral problems and disturbances and enabling people to lead happier and fulfilling lives.

86. **Contrast**: to set in opposition in order to show or emphasize differences.

87. **Habitation**: decrease in response to a stimulus after repeated presentations

88. **Repetition**: act or process or an instance of repeating or being repeated

89. **Projection**: defense mechanism in which a person unconsciously rejects his or her own unacceptable attributes by ascribing them to objects or persons in the outside world
90. **Suppression**: “conscious” exclusion of painful memories, thoughts etc.

91. **Sigmund Freud**: father of psychoanalysis

92. **Maslow’s Hierarchy of needs**: theory of human motivation. Bottom of triangle is the more basic needs.

   a. At the bottom of the triangle is **physiological**- breathing, food, water, sex, sleep, homeostasis and excretion.

   b. **Safety**- security of body, employment, resources, morality, family, health and property.

   c. **Love/belonging**- friendship, family, sexual intimacy

   d. **Esteem**- self-esteem, confidence, achievement, respect of others and respect by others

   e. **Self-actualization**- morality, creativity, spontaneity, problem solving, lack of prejudice and acceptance of facts
Last few things...

Hello, future doctor/doctora! You made it to the end of my study guide. I am so proud of you and you should be so proud of yourself. I know what you are going through. Do not be discouraged. This journey to becoming a doctor is not going to be easy. If this is your dream it will be worth it. I had a very good Orthopedic Surgeon as my preceptor for Surgery and he told my group, “Anything and everything that can make you quit will happen. But the fact that you didn’t let it make you quit already makes you a better doctor.” Remember, you will face more challenges but you can/will survive it. You can do well on this exam. I believe it. I thought I wouldn’t do well but look at me, I just focused and made this study guide. I want you to share this and help others achieve their dreams too. This is for those who find my blog and want to pursue medical school. Please, do not let fear stop you from getting what you want. Work hard and pray hard. You are not alone in this. You have supporters. I support you! Thank you for using my study guide. I am praying for your success in the NMAT and in your future med school life!

If you ever want to get in contact with me

follow me on Instagram: medfit137 and message me

or Email: gabrielen137@gmail.com

LUKE 1:37 “For with God nothing shall be impossible.”