upcat reviewer

Engineering Student Council 2006-2007



ACKNOWLEDGEMENTS

The ACADEMICS COMMITTEE of the Engineering Student Council 2006-2007 would like to extend its deepest gratitude to:

- the Engineering Student Council 2005-2006 academics
 committee headed by Ms. Cherrie May Avena
 - o Julius Calubayan
 - Leo Dacon
 - o Johanna Joyce Demetria
 - o Geomar Lubaton
 - o Melissa Manuel Lauren
 - o Joane Rose Nario
 - o Lady Marianne Polinga
- and the rest of the incumbent Engineering Student council officers.

for taking an active part and for the unceasing tireless support in the making of this College Entrance Exam Reviewer. We share the success of this reviewer with you. Godspeed.

NESTEE - EXY - PAUL - HAROLD - LEW - MICX - NEIL - SOL -TANYA





HAT TO DO BEFORE THE EXAMS...

- 1. Know the coverage of the entrance exams in each of the schools where you are applying for admission. The usual coverage is English-Math-Science. Some schools require non-verbal tests:
- 2. Go over your textbooks and class notes, and attend a good review class. A review class will give you a comprehensive summary of your major high school subjects. It will also familiarize you with the different types of test questions and teach you the corresponding techniques and strategies for answering them. Thus you will feel more confident and less nervous during the actual exams. You won't waste precious time analyzing and understanding instructions. Remember, most entrance exams are under time pressure.
- 3. Your admission to college depends on both your high school grades (usually 40%) and your score in the entrance exams (usually 60%). You can greatly improve your chances for admission by performing well in the exams.
- 4. When you get your Test Permit, check if it was properly accomplished. Does it have the necessary signatures? Do you resemble your photo? Prepare your school ID - you may need it for verification of your identity.
- 5. Know the exact location of your Testing Center. Visit it several days before your exams so that you won't waste time looking for it right on the day of reckoning.

Check out your assigned room. Is it air-conditioned? Then bring a jacket because it's hard to take an exam when you're shivering.

Is there a CR nearby? Familiarize yourself with the location so that you will not waste time looking for it at the time of need.

- 6. Prepare your pencils and erasers ahead of time. Is your pencil the prescribed brand and number? Does the eraser erase easily or does it leave smudges?
- 7. You will not be allowed to go out and eat during the exams.

TIPS 2

3



- 8. Prepare yourself psychologically by being positive and optimistic. Do not allow any emotional interference before your exams. Ex., this is not the time to be guarrelling with your best friend or mother or MU!
- 9. Keep reviewing your textbooks, class notes, review materials and simulated tests several days before your exams.
- 10. Sleep well on the eve of your exams. Lack of sleep greatly impairs memory and concentration.



HAT TO DO ON THE DAY OF YOUR EXAMS ...

- 1. Eat a moderate meal before leaving the house. Don't eat too little your stomach will be grumbling. Don't eat too much - your blood will rush to your digestive system, thus depriving your brain. Drink moderately so that you won't keep going to the CR.
- 2. Don't forget to bring your Test Permit, pencils, eraser, sharpener, and a reliable watch. The watch is very helpful in pacing yourself during the exam.
- 3. Leave your house early and give allowance for traffic jams. The roads and streets surrounding UP and Ateneo have massive traffic jams during entrance exams.

TIPS



HAT TO DO DURING THE EXAMS ...

- 1. Check your test booklet for any missing or misprinted pages. Ask help from the proctor or teacher if necessary
- 2. Listen to instructions carefully
- 3. Pace yourself. Don't waste time on difficult questions skip them and go back later. But when skipping, make sure that your succeeding answers still match the questions. [i.e. make sure that your Answer no.5 is for Question no. 5]
- 4. Most exams are "right minus a fraction of the wrong." [e.g. a wrong answer can be given a weight of $\frac{1}{2}$ point only instead of 1 point. If you wish to guess, guess intelligently.]
- 5. Review your work if you still have time.
- 6. Be honest. Don't glance at your seatmate's answers because he may have a different set of questions.

TIPS

4

TESTWISENESS

10 Techniques to Get a Higher Score

- Relax. Don't be nervous. Before your exams, do this simple exercise to ease your tension: Close your eyes for a few minutes and relax your face muscles. When your face muscles relaxed, you will feel that the rest of your body will also become relaxed.
- 2. Know the time allotment for each segment of your exam so that you can pace yourself accordingly.

Example:

Nos. 1-60	Science	60 questions	50 minutes
Nos. 61-120	Math	60 questions	70 minutes
Nos. 121-180	-Reading Comprehension	60 questions	-45 minutes
Nos. 181-250	-Language Proficiency	70 questions	-30 minutes

- 3. Listen to instructions carefully. Answer the easy questions first, and then tackle the hard ones. Don't spend too much time on the hard questions go back later if there's time.
- 4. Check frequently (e.g. every 10 items) to make sure that your answer matches the corresponding questions, more so after you have skipped some items. Example: Does Answer No.10 correspond to Question No. 10?
- 5. Look for shortcuts and avoid the length computations in solving Math problems.
- 6. Some questions can be answered through common sense and mental calculation.

Example:

The 140 students in the PE class were made to line up according to their class numbers, and then told to count off "1-2" and divide themselves into two lines. All the 1's were in the first line; all the 2's were in the second line. In which line was Student No. 122?

Guide: Note that all the 1's or odd-numbered students were in the first line; and all the 2's or even-numbered students were in the second line. So it's easy to conclude that Student No. 122 was in the second line.

7. Some questions are easier to solve when visualized with the use of a diagram.

Example:

The town of Marabut is located along Marikina Highway. The town of Caranglan is west of Marabut. Sarangani is east of Caranglan, but west of Marabut. Daraga is east of Rajamon, but west of Sarangani and Caranglan. Which town is the farthest west?

First step: Draw a line to locate the relative position of each town.

"The town of Caranglan is west of Marabut." So mark their respective locations on the line.



Next Step: Place the other towns in their correct order.



Answer: The town farthest west is Rajamon.

- 8. Use the "Process of Elimination" (POE) when you are unsure of the right answer but sure of the wrong answers. Deciding between two choices is easier than deciding among four or five. Remember, educated guesses can raise your score, and every wrong answer you can cross out will improve your chances of guessing correctly. See your English Reviewer for examples of the use of "POE."
- 9. Watch out for tricks and traps. These are purposely included by the test-makers to confuse you and to test how clever you really are.
 - Example 1: Violation of the rule of "parallel structures"

 "Eat, drink and singing -that's what men usually do in beerhouses."

Explanation: "Singing" should be "sing."

Example 2: Insertion of a clause or phrase to confuse you about subject-verb agreement "Many politicians, in their desire to win an election, makes grandiose promises to voters.

Explanation: The subject is "politicians," so the verb should be "make."

Example 3: Use of an inverted sentence structure - the verb comes before the subject "In the middle of vast cornfields stand the house where I was born."

Explanation: The subject is "house," so the verb should be "stands."

Example 4: Use of misplaced modifiers

"Wrapped in several layers of paper and bound securely with tape, the worker made sure that the fragile figurines would not be broken."

TIPS

Explanation: This sentence gives the impression that it's the worker that was wrapped in paper ands bound with tape.

10. When answering questions that determine your ability to organize phrases or sentences, look for <u>keywords</u> that will help your answer the question rightaway without thinking exhaustively.

Example:

- a. Secondly, they had no leader.
- b. Firstly, the workers were not united.
- c. Finally, they did not have the support of their families.
- d. Thirdly, they had no funds to tide them over.
- e. From the beginning, it looked like the workers' strike was doomed to fail.

Answer choices: 1. abdec

- 2. cbead
- 3. deabc
- 4. ebadc

There are several ways of approaching this question.

One way is the "Process of Elimination: "

Eliminate Answer Choice No.1 right away because it starts with "a" ("Secondly").

Eliminate Answer Choice No.2 right away because it starts with "c" ("Finally").

Eliminate Answer Choice No.3 right away because it starts with "d" ("Thirdly").

Answer Choice No. 4 is the only one left, so it must be the right choice.

Another way is by analyzing the sequence of some keywords and matching them with the answer choices:

Note the following:

"Firstly..." is b;

"Secondly..." is a;

"Thirdly..." is d.

 $P_{ij} = P_{ij} + \frac{1}{2} \frac{1}{2} P_{ij} + \frac{1}{2} P_{ij} + \frac{1}{2} \frac{1}{2} P_{ij} + \frac{1}{2} \frac{1}{2}$

So find out which among the answer choices has the sequence "b-a-d" and you will note that only Answer Choice No. 4 contains that sequence.

— Ceneral Science
— Physics
— Biology
— Chemistry

SCIENCE

GENERAL SCIENCE

1.	Which among these is not a good conductor of electricity?			
	a)	bronze	d)	plastic
	b)	iron	e)	none of the above
	c)	gold	•	
2.	If the to	emperature of an ideal gas is increased and the	volur	me is held constant, the
	pressu	re will		
	a)	increase	d)	increase or decrease
	b)	decrease	e)	cannot be determined
	c)	remain the same		
3.	The un	its of carriers for codes for related proteins are c	allec	;
	a)	chromosomes	d)	dominant traits
	b)	genes	e)	none of the above
	c)	alleles		
4.	The dif	fusion of heat through a liquid or gas by motion	of its	s parts is
	a)	radiation	d)	greenhouse effect
	b)	conduction	e)	none of the above
	c)	convection		
5.	The sh	ape of the earth is		
	a)	oblong	d)	cubic spheroid
	b)	sphere	e)	none of the above
	c)	oblate spheroid		

6.	6. If both the force and area of application of the said force are halved, the pressure will			
	a)	increase by a factor of 2	d)	remain constant
	b)	decrease by a factor of 2	e)	none of the above
	c)	diminish by square root of 2		
7.	At wha	at firing angle will you reach a maximum range?		
	a)	30°	d)	90°
	b)	60°	e)	10°
	c)	45°		
8.		rton's Second Law, the ratio of the effective force ration is	app	olied to a particle and its
	a)	negligible	d)	varying
	b)	constant	e)	undefined
	c)	unity		
9.	Newto	n's Second Law was originally stated in the form		
	a)	F= vdm/dt	d)	all of the above
	b)	F= mdv/dt	e)	none of the above
	c)	F= d(mv)/dt		
10.	For a p	particle undergoing uniform motion, the accelerat	ion i	s
	a)	always nonzero	ď)	always positive
	p)	may be nonzero	e)	cannot be determined
	c)	always zero		
11.	When is	mechanical energy is conserved, potential energy	is n	naximum when kinetic energy
	a)	maximum	d)	cannot be determined
	b)	minimum	e)	none of the above
	c)	equal		

12.	2. If an object is moving at constant acceleration in a straight course, its instantaneous velocity through any time interval is				
	a)	greater than v _{ave}	d)	half of its v _{ave}	
	b)	less than v _{ave}	e)	none of the above	
	c)	equal to its v _{ave}			
13.	Given t	wo vectors A= 4mi + 3mj and B= 2mi - 3mj, who	at is	A+B?	
	,a)	8.61m	d)	8.61mi	
	b)	6mi	e)	none of the above	
	c)	6m			
14.	The atr	nospheric layer nearest the earth's surface is		·	
	a)	Lithosphere	d)	Troposphere	
	p)	Stratosphere	.е)	none of the above	
	c)	Hydrosphere			
15.	The mo	ost abundant of the gases composing the air is		nijelaganumnomo	
	a)	Oxygen	d)	Nitrogen	
	b)	Neon	e)	none of the above	
	c)	Carbon Dioxide			
16.	It is the	movement of molecules from a weaker liquid or	ı on	e side of the barrier to a	
	stronge	er liquid on the other side.			
	a)	Brownian movement	d)	Diffusion	
	b)	Osmosis	e)	none of the above	
	c)	Capillary action			
17.	Accord	ing to the Theory, the Earth is n	nade	up of plates moving on top	
		earth's mantle. When these plates bump into eac	h otl	ner, mountains or trenches	
	are for				
	a)	Continental Drift	d)	Plate Tectonics	
	p)	Big Bang	e)	none of the above	
	c)	Volcanic Eruption			

18. Which	of the following is a non-conventional source of	ener	gy?
a)	crude oil	d)	nuclear energy
b)	coal	e)	none of the above
c)	solar energy		
19. The ar	mount of matter present in a body is called		·
a)	volume	d)	weight
b)	mass	e)	specific volume
c)	density		
	tionship between two living things by which one in the harmed nor benefited is called	is ber	nefited while the other is
a)	Commensalism	d)	Competition
b)	Parasitism	e)	none of the above
c)	Mutualism		
21. Lunar	eclipse occurs when comes betw	veen .	
a)	•	d)	the Earth; the Moon the Sur
	Earth		and
b)	the Sun; the Moon and the Earth	e)	all of the above
c)	Mercury; the Earth and the Moon		
22. Oil ca	n be separated from water by		
a)	evaporation	d)	distillation
b)	filtration	e)	oil cannot be separated
c)	decantation		from water
23. The a	ngle of the two plane mirrors that will give the mo	ost nu	umber of images is
a)	less than 60 degrees	d)	less than 30 degrees
b)	less than 45 degrees	e)	less than 10 degrees
c)	less than 90 degrees		

24.	Which	of the following activities may disturb a balanced	eco	system inside the aquarium?
	a)	replacing the water	d)	putting too many fishes
	b)	feeding the fishes	e)	none of the above
	c)	placing the aquarium in the porch		
25.	Wood 1	floats in water because		
	a)	its density is lesser than that of water	d)	its mass is lesser than that of water
	b)	it is porous and light	e)	all of the above
	c)	its molecules are not compact		
26.	It is a t	hreadlike structure in the cell's molecules, which	cont	rols everything the cell does.
	a)	chromosome	d)	chloroplast
	b)	DNA	e)	none of the above
	c)	vacuole		
27.	When	the magma from Mayon Volcano cools and harde	ns,	it becomesrock.
	a)	Igneous	d)	Metamorphic
	b)	Volcanic	e)	none of the above
	c)	Sedimentary		
28.		nassive ensemble of hundreds of millions of stars g about a common center.	, all	gravitationally interacting and
	a)	constellation	d)	nebula
	b)	galaxy	e)	supernova
	c)	solar system		
		ন কৰিছে ক্ৰেন্ত ক্ৰিক কৰিছে কৰিছ বিশ্বস্থান কৰিছে কৰি		

PHYSICS

1.	The pla	anet's motion around the s	un illustrates			
	a.	uniform motion		ν,	d.	uniform circular motion
	b.	accelerated motion			e.	uniformly accelerated
	C .,	uniform rectilinear motion	n	1		motion
2.	The pe	riod of the pendulum is af	fected by:			
	a.	mass of the bob			d.	time of swinging
	b.	length of the pendulum	n tiljante i čisen		e.	all of the above
	c.	total energy		f		
3.	Which	forces listed below cannot	t make two bodies	s attra	ct e	ach other?
	a.	gravitational			d.	magnetic
	b.	molecular		* _V ,	e.	none of the above
	C.	centrifugal	no to			
4.	It is the	e change in the direction o	f a wave when it	passe	s ob	liquely from another.
	a.	diffraction			d.	reflection
	b.	interference	negra (Ast.A) Trans	i	e.	polarization
	C.	refraction		* .		
5.	How m	nuch work is done in lifting	a block of wood	weigh	ing :	30 N to a height of 4m.
	a.	1200 J	\$1 th		d.	12 J
	b.	120 J			e.	none of the above
	c.	100 J				
6.					/s² f	or 10 seconds. The velocity at
		d of this time is	m/s	i i		
	a.			·	d.	10
	b.	5			e.	cannot be determined
	C.	50				

7.	The number of waves passing a given point each second is the wave's			
	a.	amplitude	d.	frequency
	b.	velocity	e.	pitch
	C.	magnitude		
8.	When	a ray of light strikes a mirror perpendicular to its	surfa	ice, the angle of reflection is
	a.	0°	đ.	120°
	b.	90°	e.	none of the above
	C.	45°		
9.		characteristic of a wave changes as it travels acr	oss	a boundary between two
	differer	nt media?		
	a.	displacement	d.	power
	b.	speed	e.	all of the above
	C.	distance		
10.		icial satellite making a circular orbit around the e of the Earth because	arth	does not move closer to the
	a.	the satellite is weightless		
	b.	the satellite always moves normal to the force d	ue t	o gravit y
	C.	the Earth's gravity keeps the satellite moving wi	th co	onstant velocity
	d.	a centripetal force keeps the satellite to be in its	orbi	it
	e.	all of the above		
11.	Which	of the following may be considered a scalar quan	tity?	
	a.	displacement	d.	power
	b.	acceleration	e.	none of the above
	C.	distance		

	eball bat exerts a magnitude of force of 60N on a exerted by the ball on the bat?	bali.	What is the magnitude of
a.	60 N	d.	20 N
b.	180 N	e.	none of the above
c.			
13. What	s the frequency of a particular wave if its period is	s 0.5	50 seconds?
a.	5 Hz	đ.	4 Hz
b.	1 Hz	e.	3.75 Hz
C.	2 Hz		
14. The ac	cceleration of an object moving in a circular path i	is dir	rected the center
a.	toward	d.	tangential to
b.	perpendicular to	e.	30 degrees from
C.	away from		
15 Liquid	pressure is affected by the height and the		of the liquid.
10. Elquiu	production and and and and and and		
	density		volume
		d.	
a.	density	d.	volume
a. b. c. 16. A mirr face o	density	d. e. aving	volume all of the above g mirror in a barbershop. The
a. b. c. 16. A mirr face o	density mass area or with a wide radius of curvature is used as a shaft a person looks enlarged and the skin pores are o	d. e. aving	volume all of the above g mirror in a barbershop. The
a. b. c. 16. A mirriface o	density mass area or with a wide radius of curvature is used as a shaft a person looks enlarged and the skin pores are of mirror. concave convex	d. e. avinç clear	volume all of the above g mirror in a barbershop. The ty seen. This mirror is called
a. b. c. 16. A minr face o aa.	density mass area or with a wide radius of curvature is used as a shaft a person looks enlarged and the skin pores are of mirror. concave	d. e. aving clear d.	volume all of the above g mirror in a barbershop. The ty seen. This mirror is called prism
a. b. c. 16. A min face o a a. b. c.	density mass area or with a wide radius of curvature is used as a shaft a person looks enlarged and the skin pores are of mirror. concave convex plane phenomenon of light explains the formation of im	d. e. aving clear d. e.	volume all of the above g mirror in a barbershop. The ty seen. This mirror is called prism double
a. b. c. 16. A min face o a a. b. c.	density mass area or with a wide radius of curvature is used as a shaft a person looks enlarged and the skin pores are of mirror. concave convex plane	d. e. aving clear d. e.	volume all of the above g mirror in a barbershop. The ty seen. This mirror is called prism double
a. b. c. 16. A min face o a a. b. c. 17. Which	density mass area or with a wide radius of curvature is used as a shaff a person looks enlarged and the skin pores are of mirror. concave convex plane phenomenon of light explains the formation of im	d. e. aving clear d. e.	volume all of the above g mirror in a barbershop. The ty seen. This mirror is called prism double s by lens?

18.	The im	age produced by a convex mirror is		
	a.	virtual and erect	đ.	real and inverted
	b.	virtual and inverted	e.	a convex mirror does not
	C.	real and erect		produce an image
19.	The ve	locity of a car changes from 70 m/s north to 50 r	n/s r	north in 5 seconds. The
	magnit	ude of the car's acceleration is		
	a.	-20 m/s ²	d.	14 m/s ²
	b.	4 m/s ²	e.	20 m/s ²
	c.	-4 m/s ²		
20.	Which	of the following heat transfers is observed when	ven	tilating a room?
	a.	radiation	d.	absorption
	b.	conduction	e.	adsorption
	C.	convection		
21.	Heat w	ill always flow from object A to object B if object	B ha	as a lower
	a.	specific heat	d.	mass
	b.	total energy	e.	internal energy
	C.	temperature		
22.	If the n	nass of the Earth were twice as it is now, the gra	vitati	ional force between it and the
	sun wo	uld be		
	a.	twice as great	d.	four times as great
	b.	thrice as great	e.	none of the above
	C.	the same		

BIOLOGY

1.	. What will happen to energy if food is broken down during respiration?				
	a)	Absorbed	d)	No reaction	
	b)	Released	e)	Adsorbed	
	c)	Recycled			
2.	Which	of the following could be a possible source of CC	D ₂ ?		
	a)	Decomposition	d)	Condensation	
	b)	Light reaction	e)	none of the above	
	c)	Evaporation			
3.		is the study of heredity and variation.			
	a)	Botany	ď)	Geneticology	
	b)	Genetics	e)	Zoology	
	c)	Photosynthesis			
4.	•	opulations may or may not affect each other. Wh	at do	you call the interaction	
	where	in neither populations affect each other?			
	a)	Mutualism	d)	Neutralism	
	b)	Competition	e)	Parasitism	
	c)	Commensalisms			
5.	Seaso	ns occur because of the			
	a)	shape of the earth	d)	Moon's movement	
	b)	Sun	e)	all of the above	
	c)	tilt of the earth's axis			

6.	Which	of the following earthquake waves is the fastest	and	first to reach seismic station?
	a)	P-waves	d)	both S-waves and L-waves
	b)	L	e)	all of the above
	c)	S		
7.	During	respiration, glucose is being broken down. Whic	h of	the following is needed as
	a)	Oxygen	d)	Light
	p)	Carbon dioxide	e)	No raw material is needed.
	c)	Water		
8.	The pri	mary difference between RNA and DNA is that		
	a)	DNA is single-stranded and RNA is double-stran	nded	I
	b)	DNA is a double-stranded helix and RNA is sing	le-s	tranded
	c)	The sugar in DNA is ribose		
	d)	The sugar is both RNA and DNA is deoxyribose		
	e)	DNA is not present in plants while RNA is		
9.	Two ba	ncteria exchange genetic information. This proces	s is	called
	a)	transduction	d)	conjugation
	b)	euglena	e)	conjunction
	c)	transformation		
10.	Among	the five kingdoms, protists have		
	a)	the fewer varieties	d)	all of the above
	b)	the least diversity	e)	none of the above
	c)	the most features in common		

11.	11. What differentiates a prokaryote from a eukaryote?					
a) a eukaryotic cell possesses a genetic material while a prokaryotic cell						
	b)	both have a membrane system responsible for surroundings	delin	eating the cell from its		
	c)	a eukaryotic cell consists of a true nucleus that prokaryotic cell does not	is m	embrane-bound while a		
	d)	algae and yeasts are examples of organisms m bacteria is prokaryotic in nature	ade	up of eukaryotic cells while		
	e)	none of the above				
	daught	are two primary types of cell division. er cells are produced from a parent somatic or be to the division where four daughter cells are produced.	ody (cell. Meanwhile,		
	a)	mitosis; cytokinesis	d)	meiosis; mitosis		
	b)	cytokinesis; mitosis	e)	meiosis; cytokinesis		
	c)	mitosis; meiosis				
13.		sexual reproduction, only a single parent is involor of an asexual reproduction?	ved.	Which of the following is not		
	a)	gametogenesis	d)	tissue culture propagation		
	b)	binary fission	e)	none of the above		
	c)	fragmentation				
14.		nd of interaction, also called symbiotic relationshing from the interaction	iip, ir	nvolves two species directly		
	a)	commensalism	d)	community		

e) parasitism

b) mutualism

c) neutral

15.	5. During mitosis, the correct order of the stages involved is:							
	a)	prephase, postphase, prophase, anaphase						
	b)	prophase, telephase, metaphase, anaphase						
	c)	metaphase, prophase, anaphase, telephase						
	d)	anaphase, metaphase, prophase, telephase						
	e)	none of the above						
16.		o types of nucleic acids, deoxyribonucleic and rit g-block materials called	onu	cleic, are composed of				
	a)	nucleotides	d)	protein				
	b)	organelles	e)	DNA				
	c)	cytoplasm						
17.	lpil-ipil	seeds are used as animal feed because it has _		and the second s				
	a)	fats	d)	vitamins				
	b)	carbohydrates	e)	all of the above				
	c)	protein						
18.	The pro	esence of distinguishes the cell as	beir	ng eukaryotic				
	a)	cytoplasm	d)	nucleus				
	b)	mitochondria	e)	false feet				
	c)	vacuole		•				
19.		and other liquids enter and eventually become d	istrit	outed within the plant through				
	the			•				
	a)	xylem	d)	stomata				
	b)	phloem	e)	roots				
	C)							
20.	Which	of the following is an artificial ecosystem?						
	a)	herbal garden	d)	fish pond				
	b)	forest	e)	all of the above				
	c)	terrarium						

21.		ge of embryonic development, which immediate	ly fo	ollows meiotic division, is
	a)	blastulation	d)	neurulation
	b)	fertilization	e)	binary fission
	c)	gastrulation		
22.	The ba	sic unit of living matter is the		
	a)	cell	d)	molecule
	b)	atom	e)	quarks
	c)	nucleus		
23.	Mamm	als are different from other animal forms becaus	e the	Э у
	a)	are vertebrates	d)	consists of both land and
	b)	have mammary glands		water dwellers (i.e. human and whales)
	c)	have a unique skeletal	٥)	have fur
		system	e)	
24.		of the following are found in chromosomes, whic teristics?	h de	termine hereditary
	a)	cell	d)	genes
	b)	alkaline	e)	ATP
	c)	ova		
25.	What d	o you call the pores on the surface of a leaf?		
	a)	mitochondria	d)	chromosomes
	b)	calyx	e)	vacuoles
	c)	stomata		
26.	It is the some ti	process of partially sterilizing milk at high temperme.	eratu	res, before keeping it for
	a)	sterilization	d)	pasteurization
	b)	evaporation	e)	skimming
	c)	naturalization		

27. The un	27. The units of transmission of hereditary characteristics in an organism are						
a)	genes	d)	dominant traits				
b)	chromosomes	e)	alleles				
c)	off-springs						
28. Why is	a virus not a living organism?						
a)	It can never reproduce.	d)	all of the above				
b)	It is simpler than bacteria.	e)	none of the above				
c)	It is not a complete cell.						
29. The vascular plants include most important plants that serve as food for human beings. They are also most biologically complex of all the plants. The post-fertilization, seed-bearing remnant of a flower is a							
a)	fruit	d)	flower				
b)	seed	e)	none of the above				
c)	root						
30. An adv	vantage of sexual reproduction over asexual repro	oduc	tion is that it:				
a)	increases mutation rate						
b)	b) reduces the offspring's risk of death during development						
c)	c) increases genetic variability in a population						
d)	d) all of the above						
e)	none of the above						
c) 29. The value of the value o	It is not a complete cell. ascular plants include most important plants that are also most biologically complex of all the plants gremnant of a flower is a	servants. d) e)	ve as food for human being. The post-fertilization, see flower none of the above tion is that it:				

CHEMISTRY

1.	Which	of the following is NOT an example of a chem	nical ch	ange?
	a)	souring of milk	d)	hair being bleached
	b)	sublimation of dry ice	e)	none of the above
	c)	rusting of iron		
2.		rm refers to a scientific/ intelligent guess or pr nena or problem	obable	explanation to an observed
	a)	conclusion	d)	Hypothesis
	b)	theory	e)	none of the above
	c)	Law		
3.		water are immiscible such that when both are on top of the water. Why is this so?	e place	d in a single container oil
	a)	Oil is a nonpolar substance while water is po	lar	
	b)	Oil is a polar substance while water is a nong	oolar su	bstance
	c)	Oil is less dense than water		
	d)	Oil is denser than water		
	e)	none of the above		
4.	Which	of the following is NOT an example of a home	ogenou	s mixture?
	a)	air Letuan journal La Hartingjel	d)	copper
	b)	gasoline	e)	none of the above
	c)	brass		

ineering Student (ouncil Eng	neerii	ng Student Council			Academics Committee 2006-2007
5.			is an example of an	property		
	į.	•	temperature	III.		extensive
	i	i.	volume	IV.		intensive
	a)	1,111				
	b)	I, IV			•	
	c)	IV, I				
	d)	II, IV				
	e)	III, I				
6.	The fre	ezing	point of water based	on the Kelvin scale is		_ Kelvin.
	a)	0°			d)	273.15°
	b)	0			e)	none of the above
	c)	273.	15			
7.	Being a	able to	hit the bull's eye on	a dartboard several tin	nes	is an example of:
	1		good precision			
	1	II.	bad precision			
	i	11.	good accuracy			
	1	IV.	bad accuracy			
	a)	1, 111			d)	II, IV
	b)	I, IV			e)	none of the above
	c)	11, 111				
8.	Which	of the	following statements	is TRUE?		
	a)	All at	and the second of	ave the same number	of (electrons in the nucleus of an
	b)	All at		ave the same number	of _l	protons and neutrons in the
	c)	All a	toms of an element h	ave the same number	of p	protons in the nucleus
	d)	All a		ave the same number	of (electrons and protons in the
	e)	none	of the above			

For nos. 9-12

E	Element X has 9 protons and 12 neutrons							
9.	Its aton	nic number is	which is equal to the		·			
	a)	9, number of protons						
	b)	12, number of neutrons						
	c)	9, number of electrons						
	d)	21, sum of the number of	f protons and neutrons					
	e)	none of the above						
10.	Its mas	s number is						
	a)	9	ď)	21			
	b)	12	e)	none of the above			
	c)	18						
11.	An ator	n that has 9 protons but 1	5 neutrons is a/an		of Element X.			
	a)	isomer	ď)	particle			
	b)	isotope	e e	•)	none of the above			
	c)	example						
12.			pelong to the group: Oxyg	en	, Hydrogen, Nitrogen, Iodine,			
	Boron,	Fluorine						
	a)	lodine	d)	Nitrogen			
	b)	Boron	e	;)	Hydrogen			
	c)	Fluorine	and the second of					
13.	Given	the structural formula of h	ydrogen peroxide is giver	n s	hown			
	in the f	igure at the right. Its empi	rical formula is given by		H 0-0			
	while it	s molecular formula is						
	a)	2HO; OH	d	I)	OH; H ₂ O ₂			
	b)	2H ₂ O ₂ ; 2HO	e	:)	OH; 2HO			
	c)	H ₂ O ₂ ; OH	en e					

14.	Na⁺ is a	an example of a/an while Cl ⁻ is an ex	ample	e of a/an
	a)	cation; anion	d)	anion; metal
	b)	cation; reactant	e)	none of the above
	c)	anion; nonmetal	.	
15.	Metal a	toms tend to while nonmetal atoms	s tend	to
	a)	lose electrons; gain protons		
	b)	gain protons; lose electrons		
	c)	lose electrons; gain electrons		
	d)	gain electrons; lose protons		
	e)	none of the above		
16.		w states that a given compound has a const	tant re	elative numbers and kinds of
	atoms	and the second s		
	a)	Law of Conservation of Mass		
	b)	Law of definite/ constant composition		
	c)	Law of constant compound		
	d)	Law of atomic structure		
	e)	none of the above		
17.	Which	of the following chemical equations does not be	elong	to the group?
	a)	$C + O_2 \rightarrow CO_2$	d)	$2\text{Mg + O}_2 \rightarrow 2\text{MgO}$
	b)	$2KCIO_3 \rightarrow 2KCI + 3O_2$	e)	none of the above
	c)	$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$		
18.	Given	the unbalanced equation: $C_2H_6 + O_2 \rightarrow CO_2 +$	H ₂ O \	What type of reaction is given
	above,	which is a rapid reaction that produces flame?		
	a)	single displacement		
	b)	decomposition		
	c)	combination		
	d)	combustion		

e) double displacement

19.	As dete	ermine	ed experimentally by Italian scientist Ama	deo	Avogadro, one mole or any
	substan	ice re	particles		
	a)	2.06	x 10 ²³	d)	2.60 x 10 ²³
	b)	6.02	x 10 ²⁶	e)	6.20 x 10 ²³
	c)	6.02	x 10 ²³ (100) (100) (100)		
20.	Aceton	e, wh i	ch is used as solvent and as a reactant i	n th	e manufacture of Plexiglass,
	boils at	56.1°	C. What is the temperature in Fahrenheit s	cale	?
	a)	101°F	•	d)	133°F
	b)	159°F		e)	63.2°F
	c)	114°F	:		
21.	Aside fi	rom th	ne properties of the molecules involved, th	ie pi	rincipal factors that affect the
	speed o	of a ch	emical reaction are:		
	I.		presence of catalyst		
	11	•	the temperature at which the reaction occ	urs	
	11	1.	the concentration of the reactants		
	1/	/ .	turbulence in the reacting medium		
	a)	II, III		d)	III, IV
	b)	1, 111		e)	none of the above
	c)	Ш			
22.	Which o	does n	not belong to the group?		
	1.		Making observations		
	ii		Testing a hypothesis		
	, 11	1.	Drawing conclusions		
	IV	/ .	Scientific method		
	a)	ı		d)	IV
	b)	11		e)	none of the above
	c)	Ш			

23. Solid calcium carbide, CaC₂, reacts with water to form an aqueous solution of calcium hydroxide and acetylene gas C₂H₂. The balanced chemical equation corresponds to:

a)
$$CaC_{2(s)} + H_2O_{(l)} \rightarrow CaOH + C_2H_{2(g)}$$

b)
$$2CaC_{2(s)} + 3H_2O_{(l)} \rightarrow 2Ca(OH)_2 + 2C_2H_{2(g)}$$

c)
$$3CaC_{2(s)} + 2H_2O_{(l)} \rightarrow 3Ca^{2+} + 3OH^{-} + 3C_2H_{2(0)}$$

d)
$$CaC_{2(s)} + 2H_2O_{(l)} \rightarrow Ca(OH)_{2(aq)} + C_2H_{2(g)}$$

24. The fermentation of glucose, C₆H₁₂O₆, produces ethyl alcohol, C₂H₅OH and CO₂:

$$C_6H_{12}O_{6 (aq)} \rightarrow 2C_2H_5OH_{(aq)} + 2Co_{2 (g)}$$

How many grams of glucose are needed to produce 92g of ethyl alcohol?

a) 2

d) 180

b) 1

e) none of the above

c) 360

For nos. 25-28,

In an experiment, 5.00g of ammonia reacts with 3.000g of oxygen

$$4NH_{3(g)} + 50_{2(g)} \rightarrow 4NO_{(g)} + 6H_2O_{(g)}$$

and the state of t

- 25. Which is the limiting reactant? Excess reactant?
 - a) O₂; NO

d) NH₃; O₂

b) NH₃; H₂O

e) none of the above

- c) O₂; NH₃
- 26. How many grams of NO form?
 - a) 2.25

d) 8.78

b) 2.2

e) none of the above

c) 2

27.		nuch of the excess reactant remains after the ned (in grams)?	lin	niting reactant is completely
	a)	1.39	d)	6.38
	b)	1.40	e)	3.73
	c)	1.4		
28.	How m	any moles of the limiting reactant are there initial	ly?	
	a)	0.46875	d)	0.09375
	b)	0.469	e)	none of the above
	c)	0.094		
29.		nany grams of KmnO ₄ (FW=158) must be dissolution?	olve	ed in 200ml solution to give
	a)	0.02g	d)	2.31g
	b)	3.16g	e)	none of the above
	c)	1.58g		
30.	. How m	any milliliters of a 12.0M HCl acid solution is nee	ded	to make 600ml of 1.0M HCI?
	a)	0.05	d)	5.0
	b)	0.050	e)	20
	c)	0.5		
31	. The co	complete combustion of 3.50 mol ethane (C_2) moles CO_2 .	l ₆)	and 2.0mol of O ₂ will yield
	a)	1.1	d)	2.0
	b)	7.	e)	7.0
	c)	3.5		
32	. If only	0.50 moles of CO_2 was produced, what is the per	cen	tage yield?
	a)	45%	d)	6.2%
	b)	7.1%	e)	none of the above
	c)	16%		

- 33. Consider the elements of group2A, which of the following is correct according to increasing atomic size?
 - a) Hydrogen, Lithium, Sodium
 - b) Magnesium, Calcium, Strontium
 - c) Calcium, Barium, Strontium
 - d) Sodium, Lithium, Potassium
 - e) Calcium, Magnesium, Strontium
- 34. What is the correct electron configuration of Chloride ion? $CI = 17 \rightarrow CI' = 18$ The atomic number of chlorine is 17.

a)
$$1s^2 2s^2 2p^6 3s^2 3p^5$$

b)
$$1s^2 2s^2 2p^6 3s^2 3p^4$$

c)
$$1s^2 2s^2 2p^6 3s^2 3p^6$$

d)
$$1s^2 2s^2 2p^6 3s^1 3p^5$$

e)
$$1s^2 2s^2 2p^6 3s^2 3p^5 4s^1$$

- 35. What kind of substance turns blue litmus paper to red?
 - a) acid

d) metal

base

metalloid

- c) salt
- 36. If the pressure exerted on a confined ideal gas is doubled, what happens to its temperature and volume, taken separately?
 - a) doubled; doubled

halved; doubled

b) remains the same

double; halved

- c) halved; halved
- 37. Which of the following statements is/are true?
 - 1. The tendency of the universe is to go towards minimum entropy or disorder
 - 11. Energy can neither be created nor destroyed
 - III. The reaction is said to be spontaneous when $\Delta G > 0$
 - IV. The internal energy of a system is a state function

- a) landll
- b) I and III

- c) II and IV
- d) II, III, and IV
- e) II only
- 38. In the reaction $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$, ____ is reduced while ____ is oxidized.
 - a) Zn²⁺, Cu

d) Cu, Zn²⁺

b) Zn, Cu²⁺

e) None of the above

- c) Cu²⁺, Zn
- 39. In a certain experiment, different volumes (listed below) of 1M hydrochloric acid (I) and 1M sodium hydroxide (II) are mixed.

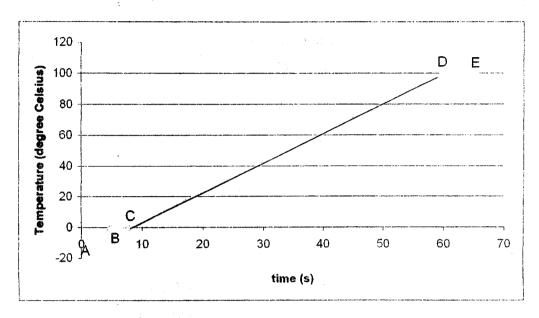
What can be said about Solution B?

Solution	l (ml)	II (mi)
Solution A	75	25
Solution B	50	50
Solution C	25	75

- a) It is warm and toxic
- b) Solution B is less acidic than Solution A.
- c) The solution has a ph of greater than seven.
- d) All of the above
- e) None of the above

For nos. 40-41

Given the temperature profile of water below at 1 atm.



- 40. If the above graph is based from experiment, which of the following observations is/are true?
 - 1. water is being heated from points A to E
 - II. The entropy change at points B to C and D to E is greater than the entropy change at points A to B and C to D.
 - III. Line BC corresponds to the normal freezing point of water
 - IV. Where the temperature remains constant there is no energy added or released
 - a) 1, 11

d) 1, 11, 111

b) 1, 11, 1V

e) None of the above

- c) I, II, III, IV
- 41. What will happen to line DE if the pressure is changed from 1 atm to 10 atm?
 - a) The slope of line DE will be negative
 - b) The slope of line DE will be positive
 - c) The slope of line DE will remain constant at the same temperature of 100°C
 - d) The slope of line DE will remain constant but at a temperature greater than 100°C
 - e) The slope of line DE will remain constant but at a temperature less than 100°C

- 42. The Ideal Gas Law is applicable only to a certain extent because Real gas molecules have finite volumes and attract one another. What are the conditions wherein deviations from ideal gas behavior can be observed?
 - a) High pressure
 - b) Low temperature
 - c) High temperature
 - d) Low pressure
 - e) None of the above

— Simple Calculus
— Ceometry
— Trigonometry
— Statistics
— Word Problems
Mord Problems

SIMPLE CALCULUS and ALGEBRA

Instructions: Choose the letter of the best answer from the given choices.

1. Given $h(x) = \sqrt{(4-x^2)}$. What is the domain of h?

2. What is the range of h?

3. f(x) = |x|. What is the range of x?

4. $\lim_{x\to 5} (3x-7) = ?$

5. Suppose $A = \{2, 4, 6, 8, 10, 12\}, B = \{1, 4, 9, 16\}.$ Then $A \cap B = ?$

For nos. 6-10

Determine if the following statements are (a) TRUE, or (b) FALSE.

6. if a<b and b<c, then a<c

7. if a<b and c<0, then ac<bc

8. if a<b and c<d, then a+c < b+d

9. $\sqrt{(5^2)} = |5|$

10. |a/b| = |a|/|b| for all $a,b \in \mathbb{R}$

11. Determine the coordinates of the midpoint of the line segment from A(5, -3) to B (1, -6)

a)
$$x = 3$$
, $y = -9/2$

c)
$$x = 3$$
, $y = 3/2$

b)
$$x = 2$$
, $y = 9/2$

d)
$$x = 2$$
, $y = -3/2$

12. Find the slope of the line from A (5, 3) and B (5, -1)

13. What is the equation of the line from A (6, -3) to B (-2, 3)

a)
$$y = 3x + 6$$

c)
$$y = \frac{3}{4} \times -\frac{3}{2}$$

b)
$$3x + 4y - 6 = 0$$

d)
$$2y = 3x - 6$$

14. Which lines are parallel?

a)
$$y = 3x + 5$$
 and $y = -3x + 5$

c)
$$y = 3x+2$$
 and $y = -x/3 + 5$

b)
$$2y = x + 3$$
 and $y = x/2 + 1$

d)
$$y = 3$$
 and $x = 4$

15. Which lines are perpendicular?

a)
$$y = 3$$
 and $y = 5$

c)
$$y = 3x + 2$$
 and $y = -x/3 + 5$

b)
$$y = 3x + 5$$
 and $y = -3x + 5$

d)
$$2y = x + 3$$
 and $y = x/2 + 1$

16. The equation of the parabola having its focus at (0, P) and having its directrix the line y = -P is:

a)
$$v^2 = 4px$$

c)
$$x^2 = 4py$$

b)
$$y^2 = -4px$$

d)
$$x^2 = -4py$$

17. The vertex of the parabola: $y^2 = 12x$ is:

18. Find the equation of the circle with center at C(4, -3) and radius r = 5.

a)
$$(x + 4)^2 + (y - 3)^2 = 25$$

c)
$$(x + 3)^2 + (y - 4)^2 = 25$$

b)
$$(x-3)^2 + (y+4)^2 = 25$$

d)
$$(x-4)^2 + (y+3)^2 = 25$$

19. |x + 3| = -5. Solve for x.

20. $\lim_{x\to 1^{-}} \sqrt{(1-x^2)} = ?$

- a) 0.5
- b) -0.5

- c) 0
- d) does not exist

21. Given $f(x) = \begin{cases} 2, x \le 3 \\ -2, x > 3 \end{cases}$ What is the $\lim_{x \to 3^+} f(x)$?

- a) 2
- b) -2

- c) 0
- d) does not exist

22. What is the $\lim_{x\to 3^{\perp}} f(x)$?

- a) 2
- b) -2

- c) 0
- d) does not exist

23. What is the $\lim_{x\to 3} f(x)$?

- a) 2
- b) -2

- c) 0
- d) does not exist

24. $|2x - 3| \le 6$. Solve for x.

- a) $\{-3/2, 9/2\}$
- b) (-3/2, 9/2)

- c) [-3/2, 9/2]
- d) [3/2, 9/2]

25. $f(x) = 3/\sqrt{(x^2 - 1)}$. What is the domain of f?

- a) 1 > x > -1
- b) x > 1 and x < -1

- c) $1 \ge x \ge -1$
- d) $x \ge 1$ and $x \le -1$

26. Divide $12x^3y^4 + 18x^4y^2 - 36xy^3$ by $3x^2y^2$

- a) $4xy^2 + 6x^2 12y$
- b) $4xy^2 + 6x^2 12y/x$

- c) $4xy^2 + 6x^2 + 12y$
- d) $4xy^2 + 6x^2 + 12y/x$

27. Multiply 2x -3y by 3x + 4y

- a) $6x^2 + xy 12y^2$

- c) $6x^2 xy 12y^2$
- b) $6x^2 17xy 12y^2$ d) $6x^2 + 17xy 12y^2$

$\angle \delta$. $(3x + \angle y)(9x - 6xy + 4y) = f$

a)
$$27x^3 + 8y^3$$

b)
$$27x^3 - 6xy + 8y^3$$

29. Factor
$$9x^2 - 30xy + 25y^2$$

a)
$$(3x-5y)(3x+5y)$$

b)
$$(3x - 5y)^2$$

30. Reduce
$$(8x^4y^7)/(12x^6y^3)$$
 to lowest terms

b)
$$(2x^2)/(3y^4)$$

31. Simplify:
$$a^2/b - b^2/a$$

$$a)$$
 $a-b$

b)
$$(a^3 - b^3)/ab$$

a)
$$a^2/3b^2$$

b)
$$3a^2/b^2$$

33. Simplify:
$$(a^{-1} + b^{-1})/(a + b)^{-1}$$

a)
$$1/(a+b)^2$$

34.
$$81^{-3/4} = ?$$

35.
$$6\sqrt{27} = ?$$

36.
$$4\sqrt{3}$$
 - $5\sqrt{12}$ + $2\sqrt{75}$ = ?

b)
$$-6\sqrt{3} + 6\sqrt{5}$$

c)
$$27x^3 + 6xy + 8y^3$$

d)
$$27x^3 - 30xy + 8y^3$$

c)
$$(3x + 5y)^2$$

d)
$$(5x-3y)(5x+3y)$$

c)
$$(2x^2y)/(3xy)$$

d)
$$(2y^4)/(3x^2)$$

c)
$$a^2b - ab^2$$

d)
$$a^3 - b^3$$

c)
$$b^2 / 3a^2$$

d)
$$3b^2/a^2$$

d)
$$(a + b)^2 / ab$$

37. Solve for x: $4^{3x} = 16^{x+1}$

a) 1

c) 3

b) 2

d) 4

38. Solve for x: $\log_x 1/16 = 4$

a) 2

c) ½

b) 4

d) 2/3

39. If $(x^2-9)/(x-3) = y$, what is the value of x in terms of y?

a) y/9

c) y-3

b) y/3

d) 37

40. Which of the following is true for all possible values of x?

a) $(x^2 + 9) = (x + 3)^2$

c) $1/x + 3x/2 = (3x^2 + 2)/2x$

b) 3(x+5) = 3x+5

d) $\sqrt[4]{(x^9)} = x^{1/5}$

41. Which equation shows the relationship between x and y in the table?

x	3	6	9	12
у	1	3	-5	7

a) y = 3x + 5

c) y = -x + 3

b) y = 2/3 x - 1

d) y = 2x - 3

42. If 7 + (2/3)*(x+1) = 9, then (2/3)x = ?

a) 2/3

c) 2

b) 4/3

d) 4

43. $1.2 \times 10^{-5} = ?$

a) 0.0012

c) 0.000012

b) 0.00012

d) none of the above

44. For all $x \ne \pm 2$, $(2x^2 + 6x + 6)/(x^2 - 4)$ is equal to:

a)
$$(2x + 3) / (x - 4)$$

b)
$$(2x^2 + 6x + 6)/(x-2)^2$$

c)
$$2(x^2 + 3x + 3) / [(x-2)(x+2)]$$

d)
$$(x^2 + 3x + 3) / [(x+1)(x-4)]$$

For nos. 45-50

Which of the following is greater: column A or column B?

- A: Column A is greater
- B: Column B is greater
- C: A and B are equal
- D: cannot be determined

~ - 1				
Co	Iu.	m	n	А

of fish in A) / (# o

Column B

45.
$$f(x) = 3x + 1$$

$$(f \circ g)(x)$$

$$(g \circ f)(x)$$

$$g(x) = 2x$$

46.
$$x = -97$$

$$\sqrt{(x^2)}$$

$$47. -1 < n < 0$$

$$n^3$$

48. Five students take test Q

median of their scores

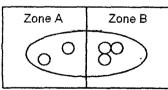
mean of their scores

49. N = set of natural numbers

number of elements of N

no. of even nos. in N

50.



(# of fish in A) / (# of fish in B)

For nos. 51-55

Compare the quantities in column A and in column B and determine if

- a) A>B
- b) B>A
- c) A=B
- d) No comparison

Column A

51. three successive discounts of 5% each

52. 3x+23+100

53. area of a square with perimeter 8

54. the percent decrease from 12 to 10

55. 2/x²

Column B

single discount of 15%

3y+100000

area of a circle having radius 2

the percent decrease from 22 to 20

2/x⁵

GEOMETRY

Instructions: Choose the letter of the best answer from the given choices.

1. What is the surface area of a sphere having a radius of 2	
	n7

a) 50.26 m²

c) 5 m²

b) 12.57 m²

d) 4.02 m²

What is the volume of my pyramid?

a) 2.667 m³

c) 800 m³

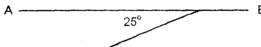
b) 266.67 m³

d) 8 m³

3. Find the supplement and complement of angle 37 degrees

- a) Supplement 143, complement- 53
- b) Supplement 53, complement- 143
- c) Supplement 0, complement- 90
- d) Supplement 90, complement- 10
- 4. For the following figure, AB and CD are not parallel.

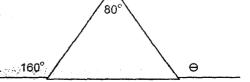
What is angle ⊖?



- a) 25
- b) 65

C — D

- c) 155
- d) Cannot be determined
- 5. For the figure on the right, find angle Θ .
 - a) 80
 - b) 100
 - c) 160



d) Cannot be determined

d) None of the above

	and the second s		
6. Find th	e area of the following figure. A	II measurements are i	in cm
a)	68 cm ²	10	
b)	56 cm ² 8	·	4
c)	10 cm ²	7	
d)	Cannot be determined	Contraction of the second of t	and the second s
7. How ma	ny foci does an ellipse have?	ntyles."	
a)	2	c)	4
b)	1	d)	0
8. A straigh	nt line whose endpoints are any	two points of a circle	
a)	Chord	c)	Circumference
b)	Radius	d)	Center
9. Planar o	coordinate system where a point t lines.	t is described by its dis	stance from two perpendicula
a)	Planes	c)	Cartesian
b)	3D objects	d)	Polar
10. What i	s the distance of these two end	points, (3,-2) and (-3,-	2)?
a)	3.5	c)	0

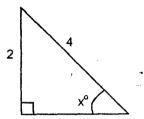
b) 6

TRIGONOMETRY

Instructions: Choose the letter of the best answer from the given choices.







2. If $\tan \Theta = -1/2$ and $270^{\circ} \le \Theta \le 360^{\circ}$, what is $\sin \Theta$?

a)
$$-1/\sqrt{5}$$

d) cannot be determined

3. Find the quadrant containing angle x^0 wherein $\sin x^0 < 0$ and $\tan x^0 > 0$

d) 4th quadrant

4. If $\cos \Theta = -1/2$ and $\cot \Theta > 0$, find $\tan \Theta$

c)
$$\sqrt{3}$$

b)
$$-\sqrt{3}/2$$

d)
$$-1/2$$

5. Find the value of $\sin 17\pi/4$

c)
$$-\sqrt{2}/2$$

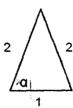
6. Express $\tan^2 x \csc x$ in terms of $\sin x$

a)
$$\sin^2 x / (1-\sin^2 x)$$

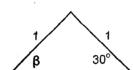
c)
$$\sin x / (1-\sin^2 x)$$

b)
$$\sin x / (\sin^2 x - 1)$$

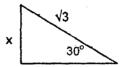
- 7. Given the figure on the right, find $\cos \alpha$.
 - a) ½
 - b) 1/4
 - c) 1/3
 - d) 0



- 8. Given the figure on the right, find angle β .
 - a) 90°
 - b) 20°
 - c) 60°
 - d) 30°



- 9. Given the figure on the right, find x.
 - a) ½
 - b) -1/2
 - c) √3/2
 - d) 0



- 10. Which of the following is a false statement?
 - a) $tan \Theta = sin \Theta / cos \Theta$
 - b) $\cot \Theta = \sin \Theta / \cot \Theta$

- c) $\sin^2 \Theta + \cos^2 \Theta = 1$
- d) $\csc^2 \Theta 1 = \cot^2 \Theta$

- 11. Express 30° into radians.
 - a) 0.54
 - b) 0.52

- c) .
- d) cannot be determined

- 12. cot ⊖ / tan ⊖ = _____
 - a) 1
 - b) sin Θ / cos Θ
- c) $\cos^2 \Theta / \sin^2 \Theta$
 - d) $\sin^2 \Theta / \cos^2 \Theta$

13. Given the figure on the right, find x.





- b) 1/2
- c) √2/2

a) √3/2

d) -1/2

STATISTICS

Instructions: Choose the letter of the best answer from the given choices.

1. A	manag	erial accountant's sample of six companies' bool	val	ue shows \$25, \$7, \$22,
\$33	, \$18,	\$15. The sample mean is:		
	a)	19		
	b)	20		
	c)	18		
	d)	21		
2.	finite va	ne mean of a random sample of size $\bf n$ taken from ariance σ^2 , then the limit form of the distribution of the standard normal distribution in $\bf n$?	of Z=	= (x- μ)/ σ/square root n as n
	a)	Probability theorem	c)	Poisson
	b)	Bell-shaped	d)	Central Limit Theorem
3.	The set	t of all possible outcomes / events of a statistical	ехр	eriment is called
	a)	Element	c)	Tree diagram
	b)	Sample space	d)	Observation
4.	Α	is an arrangement of all or part of a set of	of ob	jects
	a)	Combination	c)	Mutually exclusive
	b)	Probability	d)	Permutation
5.	How m shoes?	any possible combinations are there if I have 3 s	hort	s, 4 blouses and 5 pair of
	a)	60	c)	12
	b)	50	d)	none of the above
6.	Find th	e mean and median of the numbers from 1 to 10		
	a)	5.5, 5.5	c)	5.5, 5
	b)	5.5, 6	d)	10, 5.5

7. Given the data: 1, 3, 7, 5, 2, 7, 5, 5, 6, 7, 6, 7, 7 What is the mode? c) 7 a) 5 d) all of the above b) 6 8. How many 3-digit numbers can be formed from the digits 0,1,2,3 if each digit can be used only once? c) 18 a) 6 d) 24 b) 12 9. Ms. Martha, the adviser of section Gold would be giving out awards to 4 of her students. If each student can receive at most one award and that section Gold is composed of 30 students, how many possible selections are there? c) 60 a) 27,405 b) 120 d) 657,720 10. Seven girls would be assigned to one triple and two double classes. In how many ways can this be done? 28 a) 210 b) 5040 d) 30 11. Carl, Karl, Carlo, Carlos and Carlito are sitting on a round table when they thought of exchanging seats and count all the possible arrangements they can do. How many arrangements would they count in the end? c) 24 a) 120 b) 60 d) 5 12. What is the probability of getting a sum of 7 or 11 when a pair of dice is tossed? c) 3/7 a) 1/3 d) none of the above 13. Find the probability of getting 3 aces out of a deck of 52 cards if 5 cards are to be drawn at a time. a) ₄C₃ c) ${}_{4}C_{3} * {}_{48}C_{2} / {}_{52}C_{5}$

b) ${}_{4}C_{3} * {}_{52}C_{2} / {}_{52}C_{5}$

d) $_{52}C_3/_{52}C_5$

14. What is the probability that at least one tail occurs when a coin is tossed twice?								
a)	3/4	c)	2					
b)	1	d)	1/4					
	15. From a group of 4 men and 5 women, how many committees of size 2 are possible if there are no restrictions?							
a)	126	c)	36					
b)	24	d)	none of the above					

WORD PROBLEMS

Instructions: Choose the letter of the best answer from the given choices.

		-	
		-	0 even counting numbers and
a)	2300	d)	790
b)	650	e)	none of the above
c)	10001		
annuali	y last year and has plan		-
a)	2 years from now	d)	this year
b)	10 years from now	e)	never
c)	next year		
		•	How many hrs will they do 9
a)	33 hrs 17 mins	d)	none of the above
b)	33 hrs 40 mins	e)	cannot be determined
c)	33 hrs 36 mins		
speed.	If the car travels 60 km/	hr and the truck travels 23 k	
a)	2 hrs, 42 min, 9.7 sec	d)	7 hrs, 11 min, 2.1 sec
b)	1 hr, 18 min, 7.5 sec	e)	none of the above
c)	3 hrs, 23 min, 11.4 sec		
	the first a) b) c) If May annuall money a) b) c) If Ju ca painting a) b) c) A car is speed. be 100 a) b)	a) 2300 b) 650 c) 10001 If May deposited her money in the annually last year and has plant money if he deposited \$4000? a) 2 years from now b) 10 years from now c) next year If Ju can do a painting in 7 hrs, painting jobs if they do it at the a) 33 hrs 17 mins b) 33 hrs 40 mins c) 33 hrs 36 mins A car is traveling due north. At a speed. If the car travels 60 km/be 100 km away from the truck a) 2 hrs, 42 min, 9.7 sec b) 1 hr, 18 min, 7.5 sec	b) 650 e) c) 10001 If May deposited her money in the bank who has an annual annually last year and has plans to buy-a \$6900 bike, when money if he deposited \$4000? a) 2 years from now d) b) 10 years from now e) c) next year If Ju can do a painting in 7 hrs, May can do the job in 8 hrs. painting jobs if they do it at the same time? a) 33 hrs 17 mins d) b) 33 hrs 40 mins e) c) 33 hrs 36 mins A car is traveling due north. At the same time the car left, a speed. If the car travels 60 km/hr and the truck travels 23 k be 100 km away from the truck? a) 2 hrs, 42 min, 9.7 sec d) b) 1 hr, 18 min, 7.5 sec e)

neering	Student Co	uncil Engi	neering Stude	nt Council	Tributa ta thu	o flowing	20120		Academics Committee 2006-2007
	5 .	What i	f the truck tra	vels south	n, at what	time will	they be	100	km apart?
		a)	1 hr, 13 mir	, 5.1 sec	•			d)	1 hr, 15 min, 12.3 sec
		b)	1 hr, 12 mir	ı, 17.3 sed	:			e)	none of the above
		c)	1 hr, 17 mir	ı, 6.3 sec					
	6.	What it	f the truck tra	vels west	Programme in the state of the s	a s i (igwin	<u>.</u>	44.4	
	-	a)	3.120 hrs					d)	4.790 hrs
		b)	1.500 hrs					e)	none of the above
		c)	2.700 hrs						
	7.		peed must the	. •		•		•	are traveling upstream, at by want to beat the 20 ft mark
		a)	15 2/3 ft/s					d)	15 1/3 ft/s
		b)	16 1/3 ft/s				ter en del 194	e)	none of the above
		c)	16 2/3 ft/s						
	8.	obstac	le on the way	about 10	ft long. At	the obst	acle, the	у с	there's a catch. There's an an only travel 1 ft/s. how fast me with 20 ft mark?
		a)	14.8 ft/s					d)	-7.4 ft/s
		b)	7.4 ft/s			•		e)	none of the above
		c)	-14.8 ft/s						
•	9.		How much di	scharge m	oust the ho	se suppl	y to the	pai	height is being filled with
		a)	π ñt³/s					d)	0.001π ft³/s
		b)	$0.1\pi \text{ ft}^3/\text{s}$					e)	none of the above
		c)	0.01π ft ³ /s	to the trans		enistration of the second	M. AMILION		

10.		s the velocity of the water coming out of the hose section with 3-inch diameter?	if th	e nozzie is quarter circle iii
	a)	$0.64\pi^2$ ft/s	d)	$0.32\pi^2$ in/s
	b)	$0.64\pi^2$ in/s	e)	none of the above
	c)	$0.32\pi^2$ ft/s		
11.	build th	can build a table in 12 hrs. Trisha can also build to be same table in 11hrs. In a day, Jason starts maind 11 am and Joe came at 12 noon. How many day to make 30 tables with a daily schedule show about ay?	king s wil	tables at 9 am. Trisha joined I they consume if they are
	a)	33 days	d)	17 days
	b)	25 days	e)	none of the above
	c)	49 days		
12.	bet. W	going to play lotto tomorrow. He only plays 1 con hat is his chance in winning the jackpot if the gan must be in a particular order for the jackpot to be	ne c	hooses 4 numbers out of the
	a)	116280	d)	25240
	p)	1/116280	e)	none of the above
	c)	1/25240		
13.	degree be fron	e travels due north at 8 am with a speed of 100 kms east of the first plane at the same time with 120 n each other after 6 hrs?) km	/hr speed. How far will they
	a)	3.03 km	d)	220 km

b) 10.20 km

c) 668 km

e) none of the above

14. After that event (from number 13), the first plane changed direction and went south maintaining its speed and the other plane went straight north changing its speed to 60 km/hr. What will be their distance from each other after 6 hours excluding the 1st 6 hours?

a) 664 km	a)	664	km
-----------------------------	----	-----	----

d) 634 km

b) 654 km

e) none of the above

c) 644 km

15. A camera man takes a picture of a globe 5 m from the center of the globe. If the globe is 6 m in diameter, how big will the globe appear to the camera man in terms of diameter?

a) 5.0 m

d) 4.0 km

b) 3.5 m

e) none of the above

c) 4.8 m

16. What distance should he be from the center of the globe in order to see a 20 cm – diameter globe?

- a) 3 cm
- b) 3 m
- c) 25 cm
- d) 25 m
- e) none of the above

17. Karen has been collecting and saving 25-centavo and 1-peso coins. When she counted her coins, she found out that she has 128 coins which amount to 86 pesos. How many of each kind of coins have she?

- a) 72 25-cents and 56 1-peso coins
- b) 82 25-cents and 46 1-peso coins
- c) 56 25-cents and 72 1-peso coins
- d) 46 25-cents and 82 1-peso coins
- e) 50 25-cents and 78 1-peso coins

18. Noong nakaraang limang taon, ang edad ni Ana ay pitong beses ng edad ng kanyang anak. Sampung taon mula ngayon, ang edad niya ay doble ng edad ng kanyang anak. Ano ang kanilang edad sa kasalukuyan?

d) Ana =
$$24$$
; anak = 7

19. May and Che work together in preparation for a project. They can finish a job in 6 hours if they work together. After 3 hours of working together, May has to leave Che because she has an unexpected date. It takes Che 9 hours to finish the remaining job alone. How long will it take each of them to finish a job alone?

20. Si Ryan ay nag-invest ng P 1,000,000, isang bahagi ay sa may interest na 9% at ang natitira ay sa 7%. Ang kabuuang halaga na kanyang interest ay P 86,000. Magkano ang ininvest niya sa may 9% na interest?

- a) 100 000
- b) 800 000
- c) 600 000
- d) 400 000
- e) 200 000

Context Clues

- Context Clues

- Word Usage

- Synonyms

- Reading

Comprehension

- Analogy

English

ENGLISH

57

GRAMMAR

Instructions: Select the letter that corresponds to the underlined word/s that make the sentence grammatically incorrect. Select the letter 'E' if there are no grammatical errors found.

1.	Everyone in	our family excep	t my brother	and <u>Ì has</u> <u>ea</u>	<u>ten</u> lunch. <u>N</u>	lo error.	·
	Α		ing Amalika dan €	::B C	D	E	
2.	Hearing the	<u>news</u> the whole g	roup <u>went</u> to	the province	. No error.		
	Α	В	С	D	Ε		
3.	The chairma	n of the board <u>co</u>	nsulted his n	nembers abo	ut the com	<u>nittee's</u> majo	r problem.
	Α		В	С		D	
	No error.						
	E				*		
4.	None of the	olayers <u>in</u> the loc	ker room wer	e able to co	mprehend o	r to solved th	ne problem.
		A		•	В	С	D
	No error.						
	E		(span)				
5.	Science refe	to that dynamic	, cumulative	systems of v	verifiable co	ncepts and p	rocesses
	А В			-		C	
	which seek to	understand nat	ural phenome	ena. No error	·.		
		D	•	E			
6.	From the give	en <u>choices,</u> seled	ct the word th	at appropriat	tely comple	te each set o	f relationship.
	Α	В			С		D
	No error.				_		_
	E						
7.	Preprocessor	directives <u>can</u> <u>a</u>	ppear anywh	ere in a sour	ce file, but t	thev apply or	ily to the
		- A	В	er en		С	D
	remainder of	the source file. N	lo error.			-	_
			F				
ે.	The cover ph	otograph is a <u>co</u> r		red image of	the second second	g along Maka	ati. No error
	Α		В	` _		D	E
	However, the	ir interest in impr	oving the tea	ching of auto	omotive cou	urses have no	
	Α		B			C	D
	No error.						_
	E						

10.	Sign has bee		t only to er	nhance the	quality o	_	<u>ns</u> but als	so to help s	tudents
	. A					В			
	<u>distinguish</u> th	e differenc	e <u>between</u>	the two. <u>N</u>	o error.				
	С		. D		E				
11.	A <u>number</u> of	optional <u>se</u>	ctions hav	<u>e been</u> incl	luded. <u>N</u>	o error.			
	Α		в с	D		E			
12.	As he travels	on the cur	ved portio	n of a track	k, each ra	acer <u>are</u> <u>sut</u>	<u>ojected</u> to	an accele	ration
	Α					В	С		
	directed towa	<u>ırd</u> the cen	ter. <u>No erro</u>	<u>or.</u>					
	D		E .	to enjoy th	e Coma	mana pangangan pangangan pangangan pangangan pangangan pangan pangan pangan pangan pangan pangan pangan pangan			
13.	The professo						udy our <u>s</u>	ubject." No	error.
		Α		В		С		D	E
14.	To enjoy all r	<u>ewards</u> and	d <u>privilege:</u>	s, please p	resent <u>th</u>	ese card wi	hen <u>purcl</u>	nasing at th	ne store.
		Α	В			С	D		
	No error.								
	E								
15.	She <u>ignore</u> th	ie commer	nt and <u>settl</u>	ed in at her	r termina	I. <u>No error.</u>			
	Α		В	CD		E			
16.	Everyone ex	cept Ernie	and Bert <u>h</u>	<u>ave seen</u> tl	he film. <u>N</u>	vo error.			
	Α	В		C D		E			
17.	Finally he wir	nked up at	Karel, and	then both	<u>his</u> eyes	closed. No	error.		
	A	B			С	D	E		
18.	The <u>lieutenar</u>	<u>nt smiles</u> a	nd <u>seemed</u>	to enjoy th	ne <u>Comn</u>	nissioner's	sense of	irony. <u>No e</u>	error.
	Α	В	С			D			E
19.	He felt like he	e <u>was</u> flying	<u>though;</u> a	ind that wa	s good e	nough. <u>No</u>	error.		
	Α	в с	D				Ε		
20.	Sitting along	the beach	across the	clinic, Lito	wondere	ed what he	was <u>sup</u> p	ose to do.	No error.
	Α		В		С			D	E
21.	The suspect	<u>demanded</u>	for a <u>20 m</u>	<u>inute</u> break	defore	the trial <u>res</u>	<u>umes</u> . <u>No</u>	error.	
		A	and the second particular	В	C	••	D	E	
22.	At the interse	ction of Ra	ift Avenue	and Stock	Street, t	he road <u>dea</u>	<u>ad-ends</u> a	nt a vast <u>tw</u>	o storey
	Α	В					С		D
	shed. No erro	<u>or.</u>							
	Ε								
23.	Both of his bo	odyguards					em off. N	o error.	
	A		B	- Carlotte Sandana	in skylvery	- , C	D	E	

24.	Cherry began t	o point eas	t <u>across</u> P	ark Avenue	when s	he was <u>str</u>	<u>uck</u> by the fla	it of the <u>ma</u>	ın's
	A		В	S			С		D
	hand. No error.	<u>.</u>							
	E		:			5			
25.	Wilbert and Isa	iah Jones <u>v</u>	vas draggi	ing badly w	hen <u>the</u> y	left the Pl	aza later <u>tha</u>	t night.	
			A B		(D	
	No error.								
	E			to the state	earning or				
26.	I only come to	ask <u>you</u> if <u>y</u>	ou would	bring your l	Holy Wa	ter to the g	raveyard. <u>N</u> o	error.	
	Α	В	C D					E	
27.	I guess he sat o	down <u>restin</u>	g in the sh	ade and ne	ever <u>got</u>	up again. <u>I</u>	No error.		
	A B	С			. [)	Ε		
28.	What attitude t	owards life				expressing	? No error.		
		A		فالإنجاء فنحاف فالما الميديات	Ç D		E		
29.	Her childhood	<u>was</u> happy,				when she	became a yo	oung woma	n.
	Α	В		С		ľ)		
	No error.								
	E		~	e e en general	e*				
30.	The second ma	aster, in app	oreciation	of <u>his</u> wit a	nd <u>learni</u>	ing gave h	im <u>his</u> freedo		<u>r.</u>
			Α	В	C		D	E	
31.	That night, he	cradled the		n calf in his		rms and ca	<u>ırried</u> it home		
		Α	В		С		D	E	
32.	Everyone in the	e class und	erstood th	e project <u>e</u> z			why I feel so	stupid.	
	Α				ВС	D			
	No error.								
	Ε			40		N .			
33.	Please call me				ng place.				
0.4	A The all sich as:	B		D	-645- D	E	ha Dhilinnina	a Na ama	
34.	The oil-rich cou	intry of Bru			or the <u>Re</u>	_	ne Philippine		<u>.</u>
35	A When I <u>called</u> y	vou un thie	B morning v	C what are vo	u doina?	D No error		E	
JJ.	A	you up mis	morning, t	wiiat <u>aie yo</u> B	C D				
	^			D	ט ט				

ENGLISH

CONTEXT CLUES

WORD USAGE

Instructions: Determine which of the following synonyms on the given choices best corresponds to how the underlined word/s were used on each sentence.

1.	Leo ma	ade a disappointed, mis	sunderstood face, fro	om the ma	any creases at his <u>disposal</u> .
	a)	authority		c)	garbage unit
	p)	distribution		d)	regulation
2.			-		when the enforcement of the
	provisi	ons of the construction	specifications is we	ll observe	d.
	a)	strengthening	to the second	c)	regulation
	b)	implementation		d)	putting of force
3.	Joanna	a's reply to his query wa	as sure and <u>crisp,</u> the	at it didn't	took too long before she was
	able to	prod him away.			
	a)	brittle	on circulation of the	c)	concise
	b)	lively		d)	fragile
4.	The fire	st permanent tooth usu	ally appears about fo	our years	after the baby teeth have
	erupted	<u>1</u> .			
	a)	exploded		c)	burst out
	b)	broken out		d)	emerged
5 .	The pro	ofessor took an <u>immacı</u>	ulate handkerchief o	ut of his p	ocket, and began to polish
	the lens	ses of his glasses.			
	a)	pure		c)	error-free
	b)	spotless		d)	flawless
6.	By the	end of the century, mas	ss <u>circulation</u> of new	spapers h	ad been developed.
	a)	movement of blood the	rough	c)	distribution of copies
		veins and capillaries		d)	availability in libraries
	b)	dissemination			•

7.	Artifice was one of the qualities of style that was worthy of further <u>cultivation</u> .					
	a)	fostering of growth	c)	development		
	b)	refinement	d)	elevation		
8.	Much o	f his writing is <u>slack</u> that is why readers get bored	at	his works.		
	a)	lacks action	c)	lacks firmness		
	b)	lacks completeness/ perfection	d)	lacks diligence		
9.	Membe	rs shall be adequately braced to resist lateral and	d tor	sional displacement.		
	a)	connected together	c)	reinforced		
	b)	supported with braces	d)	get ready for an attack		
10.	Biscuits	s had been <u>stamped</u> on the floor, making mopping	g m	ore laborious than it already		
	a)	crushed	c) ·	pounded		
	b)	impressed	d)	imprinted		
11.	Please	depress the red button when you're ready.				
	a)	press down	c)	discourage		
	b)	repress	d)	weaken		
12.	The co	mmander ordered his men to hold their posts no	mati	ter what happens.		
	a)	support	c)	adhere to		
	b)	maintain	d)	carry		
13.		Cherrie and Chester finally got into the elevator, t each other.	hey	found themselves <u>crushed</u>		
	a)	powdered to small pieces	c)	squeezed		
	b)	silenced	d)	had an infatuation		
14.	One we	eek later, the vessel <u>deposited</u> them in one of the ula.	big	gest ports on the Eastern		
	a)	consigned	c)	credit		
	b)	dropped	d)	accumulated		

······································						
15. Paulin	e's words had made all sorts of frightened echoe	s in e	our minds. The word <u>echo</u> in			
this sentence means						
a)	a close imitation					
b)	an answering sympathetic effect					
c)	a soft recurrence of a statement					
d)	a reverberation of sound waves					
	ases trapped in pasty lav a do not escape freely a sive violence	ind m	ay sometimes break out with			
a)	sudden	c)	unrestrained			
p)	expressive	d)	volatile			
17. The <u>d</u>	ead load consists of the weight of the structure co	omple	eted.			
a)	empty	c)	constant			
b)	inert	d)	lifeless			
	and the second of the second o					
SYNONY	'MS					
Instructions:	Choose the letter of best answer from the given	choic	es.			
18. Terrie	kept fumbling the materials, gathering a few and	shut	fling them as if they were			
cards.						
a)	playing with	c)	groping for			
b)	juggling	d)	moving clumsily			
	olice officers <u>sprawled</u> over a couch in Johanna's wn homes.	i livin	g room, as if they were in			
a)	creep awkwardly	d)	sit with arms and legs spread			
b)	lay down		out			
c)	jumped into					

20.	. The interviewer, dark, young and serious, turned his attention to us with a <u>cramped</u> sort of face.					
	a)	paralyzed	c)	bothered		
	b)	cheerful	d)	expressionless		
21.	The do	g <u>ambled</u> to the door, which was slightly ajar, and	slov	wly squeezed out into the		
	passag	e. In thropic and in				
	a)	crept	c)	walked		
	b)	ran .	d)	jumped		
22.	Harold	lumbered at him and <u>clouted</u> him across the head	i .			
	a)	cover with a clout	c)	stroke gently		
	b)	hit forcefully	d)	kissed		
23.		ht they were likely to <u>bundle</u> him into a car but the oad and pointed him towards the town center.	poli	icemen simply led him back		
	a)	wrap	c)	a lot of things		
	b)	hustle	d)	group together		
24.	The bra	ass bars are <u>bundled</u> in two's, three's and four's.				
	a)	wrapped	c)	a lot of things		
	b)	hustled	d)	grouped together		
25.	The tra	actor-trailer backed away from the smoldering wre	eck a	and stopped.		
	a)	burning steadily	c)	burning with much smoke		
	b)	flaming increasingly	d)	exploding		
26.	The gy	mnast <u>plunged</u> from bar to bar, twisting and turnir	ng w	ith dazzling speed.		
	a)	skipped playfully	c)	swung lightly		
	b)	thrust forward	d)	dangled idly		
27.		gao lady gently <u>slipped</u> off the headband that held e could rest for a while.	d the	e basket high on her back so		
	a)	removed quickly	c)	wore in		
	b)	slid out of place	d)	threw away		

28.	His stoi	c attitude earned him the title "man made of stor	ne."	
	a)	active	c)	hard
	b)	heavy	d)	indifferent
29.	Samue	could not stand the <u>gelid</u> surroundings of the Al	pine	Mountains.
	a)	very cold	c)	humid
	b)	very hot	d)	tepid
30.	Do not	worry about running short of rice because we had	d a g	copious harvest last month.
	a)	weak	c)	depleting
	b)	innumerable	d)	abundant
31.	Jojo is	suffering from <u>asphyxia</u> . Noxious gases during fi	re ha	ave suffocated him.
	a)	an unconscious state	c)	a state of suppression
	b)	a state of trance	d)	a state of affliction
32.	Her hai hair?	r was <i>full</i> and lightly curled. Which of the followir	ig te	rms best describes a <u>full</u>
	a)	chubby	c)	detailed
	b)	filled	d)	thick,
33.	The jud	ge exculpated the accused for lack of evidence.		
	a)	proved guilty	c)	banished
	b)	exonerated	d)	proved innocent
34.	The po	olitician was criticized for his <u>preposterous</u> remark	ks.	
	a)	lengthy	c)	absurd
	b)	witty	d)	promising
35.	Having	lived with three old maids, Lucy projects a retice	<u>nt</u> a	ttitude.
	a)	meek	c)	effulgent
	b)	effusive	d)	offensive

READING COMPREHENSION

Instructions: Each passage below is followed by questions based on its content. Choose the best answer and shade the box corresponding to that answer.

Passage 1:

Ho-ti trembled every joint while he grasped the abominable thing, wavering whether he should not put his son to death for an unnatural young monster, when the crackling scorching his fingers, as it had done his son's, and applying the same remedy to them, he in his turn tasted some of its flavor, which, make what sour mouths he would pretence, proved not altogether displeasing to him. In conclusion (for the manuscript here is a little tedious) both father and son fairly sat down to the mess, and never left off till they had dispatched all that remained of the litter.

(An excerpt from Charles Lamb's A Dissertation Upon Roast Pig)

1.	in the	In the first sentence, the nearest meaning to the word "abominable" could be						
	a)	humongous	c)	illegal				
	p)	detestable	d)	dangerous				
2.	What	remedy did the father used for his scorched fing	jers?	?				
	a)	he put his fingers under the running water						
	b)	he went outside and buried them in snow						
	c)	he licked them						
	d)	he wrapped cloth around his fingers						
3.	What	kind of figure of speech was used in the first sta	tem	ent, "Ho-ti trembled every joint"?				
	a)	simile	c)	hyperbole				
	b)	metaphor	d)	personification				

Passage 2:

In a sense we have come to our nation's capital to a cash check. When the architects of our republic wrote the magnificent words of the Constitution and the Declaration of Independence, they were signing a promissory note to which every American was to fall heir. This note was a

promise that all men, yes, black men as well as white men, would be guaranteed the unalienable rights of life, liberty, and the pursuit of happiness. It is obvious today that America has defaulted on this promissory note, insofar as her citizens of color are concerned. Instead of honoring this sacred obligation, America has given the Negro people a bad check, a check has come back marked "insufficient funds."

(An excerpt from Martin Luther King Jr.'s I Have A Dream)

- 4. The word "defaulted" in the passage means
 - a) set for automatic

c) remove fault

b) neglected

d) failed to appear on time

- 5. The whole passage is developed by
 - a) comparison and contrast

c) cause and effect

b) narration

d) dialogue

- 6. The purpose of the passage is to
 - a) humor

c) preach

b) bring about awareness

d) enlighten

Passage 3:

Sun Tzu said: There are five ways of attacking with fire. The first is to burn soldiers in their camp; the second is to burn stores; the third is to burn baggage trains; the fourth is to burn arsenals and magazines; the fifth is to hurl dropping fire amongst the enemy.

In order to carry out an attack, we must have means available. The material for raising fire should always be kept in readiness. There is a proper season for making attacks with fire, and special days for starting a conflagration.

The proper season is when the weather is very dry; the special days are those when the moon is in the constellations of Sieve, the Wall, the Wing or the Cross-bar; for these four are all days of rising wind.

(An excerpt from Sun Tzu's The Art of War)

ENGLISH

READING COMPREHENSION

Instructions: Each passage below is followed by questions based on its content. Choose the best answer and shade the box corresponding to that answer.

Passage 1:

Ho-ti trembled every joint while he grasped the abominable thing, wavering whether he should not put his son to death for an unnatural young monster, when the crackling scorching his fingers, as it had done his son's, and applying the same remedy to them, he in his turn tasted some of its flavor, which, make what sour mouths he would pretence, proved not altogether displeasing to him. In conclusion (for the manuscript here is a little tedious) both father and son fairly sat down to the mess, and never left off till they had dispatched all that remained of the litter.

a specific tha

(An excerpt from Charles Lamb's A Dissertation Upon Roast Pig)

1.	in the	e first sentence, the nearest meaning to the word "abominable" could be					
	a)	humongous	c)	illegal			
	p)	detestable	d)	dangerous			
2.	What	remedy did the father used for his scorched fing	ers?	•			
	a)	he put his fingers under the running water					
	b)	he went outside and buried them in snow					
	c)	he licked them					
	d)	he wrapped cloth around his fingers		•			
3.	What	kind of figure of speech was used in the first state	lem	ent, "Ho-ti trembled every joint"?			
	a)	simile	c)	hyperbole			
	b)	metaphor and a second of the s	d)	personification			

nassage 2:

In a sense we have come to our nation's capital to a cash check. When the architects of our republic wrote the magnificent words of the Constitution and the Declaration of Independence, they were signing a promissory note to which every American was to fall heir. This note was a

promise that all men, yes, black men as well as white men, would be guaranteed the unalienable rights of life, liberty, and the pursuit of happiness. It is obvious today that America has defaulted on this promissory note, insofar as her citizens of color are concerned. Instead of honoring this sacred obligation, America has given the Negro people a bad check, a check has come back marked "insufficient funds."

(An excerpt from Martin Luther King Jr.'s I Have A Dream)

- 4. The word "defaulted" in the passage means
 - a) set for automatic

c) remove fault

b) neglected

d) failed to appear on time

- 5. The whole passage is developed by
 - a) comparison and contrast

c) cause and effect

b) narration

d) dialogue

- 6. The purpose of the passage is to
 - a) humor

c) preach

b) bring about awareness

d) enlighten

Passage 3:

Sun Tzu said: There are five ways of attacking with fire. The first is to burn soldiers in their camp; the second is to burn stores; the third is to burn baggage trains; the fourth is to burn arsenals and magazines; the fifth is to hurl dropping fire amongst the enemy.

In order to carry out an attack, we must have means available. The material for raising fire should always be kept in readiness. There is a proper season for making attacks with fire, and special days for starting a conflagration.

The proper season is when the weather is very dry; the special days are those when the moon is in the constellations of Sieve, the Wall, the Wing or the Cross-bar; for these four are all days of rising wind.

(An excerpt from Sun Tzu's The Art of War)

What can be a good title for the excerpt?				
vviiat ca	to be a good title for the excelpts weather is			
a) 🤄	Season for fire	c)	War is Better than water	
b) /	Attacking with fire	d)	The Art of Burning	
The purp	ose of the passage is to			
a) t	each	c)	ridicule	
	a) S b) /	b) Attacking with fire The purpose of the passage is to	a) Season for fire c) b) Attacking with fire d) The purpose of the passage is to	

- 9. What is an arsenal?
 - a) a camp

b) enlighten

c) a building filled with ammo

d) boast

- b) a building filled with guns
- d) a parking space for chariots
- 10. Why is a very dry weather the proper season for making attacks with fire?
 - a) Soldiers usually sleep when the weather is dry
 - b) Soldiers are busy searching for food
 - c) It is more difficult to put out fires *
 - d) It is unlucky in their religion to put out fires during dry season

Pasasge 4:

Read not to contradict and confute, nor to believe and take for granted, but to weigh and consider. Some books are to be tasted, others to be swallowed, and some few to be chewed and digested; That is, some books are to be read, only in parts; others to be read but not curiously, and some few to be read wholly, and with diligence and attention. Some books also may be read by deputy; and extracts made of them by others; but that would be only in the less important arguments and meaner sort of books; else distilled books are like common distilled waters, flashy things. Reading maketh a full man; Conference a ready man; and Writing an exact man; and therefore, if a man writes little he need to have a great memory; if he confers little he need have a present wit; and if he reads little he need have much cunning, to seem to know that he doth not. Histories make men wise; Poets witty; and Mathematics, subtle; Natural Philosophy, deep; Moral, grave; Logic and Rhetoric, able to contend; Abeunt studia in mores.

Francis Bacon, Essay: 1561-1626

11. What are meant to be digested?

a) men

c) books

b) water

d) mores

- 12. When do you consider a man full?
 - a) when he can offer
 - b) when he can read
 - c) when he can see
 - d) when he can read and understand
- 13. How can a reader learn from a book?
 - a) when he joins arguments
 - b) when he knows many writers
 - c) when he can write poems
 - d) when he applies and assimilates the words
- 14. According to the passage, why does a man read?
 - a) to contradict and confute have the second
 - b) to believe and take for granted
 - c) to waste and swallow
 - d) to weigh and consider
- 15. How will a reader treat a book?
 - a) as a friend

c) as a memoir

b) as a confidante

d) as a historian

Passage 5:

Peter came to him and said, "Lord, how often shall my brothers sin against me, and I forgive him? Up to seven times?"

Jesus said to him, "I say to you, not seven times, but seventy times seven."

Thus the kingdom of heaven is like a certain king who had servant that owed him ten thousand talents. Because he could not pay, the lord ordered him to be sold, and his wife and children, and all that he had, and payment be made. The servant therefore fell down and worshipped him saying, "Lord have patience with me, and I will pay you all." Then the

University of the Philippine

Lord of that servant was move with constant compassion and freed him and forgave him the debt.

"But the same servant went out and found one of his fellow servants who owed him a hundred pence, and he laid hands on him, and took him by the throat, saying, "Have patience with me and I will pay you all." And he would not, but went and cast him into prison, till he pays his debt.

So when his fellow servants saw what was done, they were very sorry and came and told their lord all that was done.

"Then his lord, after calling him forth said to him 'O wicked servant, I forgave you all that debt, because you begged me. Should you not also have the compassion on your fellow servant, even as I had pity on you?" And his lord was angered and delivered him to the torturers, till he should pay all that was due to him. So likewise shall my heavenly Father do also to you, if you do not forgive from your heart your brothers' trespasses."

16. Jesus told Peter that he must forgive his brother

a) seven times

c) many times

b) seventy times seven

d) sometimes

- 17. The king forgave his servant because
 - a) he felt sorry for him
 - b) the servant paid him quickly
 - c) the servant fell down and hurt himself
 - d) the servant's wife promised to sell their goods to pay the debt
- 18. When the servant was imprisoned by the man who owed him money, his companion

या प्राप्ति । इति विकास क्षेत्री क्षेत्री क्षेत्री क्षेत्री है ।

- a) did nothing
- b) were angry
- c) asked him what he was doing
- d) reported what he had done to their lord

- 19. In this parable, Jesus is teaching about
 - a) money

c) forgiveness

b) kings

- d) prisons
- 20. The servant's lord was angry with him finally because
 - a) he had not paid his debt
 - b) he had no pity on his fellow servant
 - c) the lord wanted money
 - d) the servant continued to beg for more time to pay

ANALOGY

Instructions: Select the word or pair of words that appropriately completes the following relationship.

1.	ODE : POETRY;::		
	a) THEME - ESSAY	c)	FABLE - PROSE
	b) CONFLICT - SHORT	d)	TRAGEDY -DRAMA
	STORY	e)	DENOUEMENT - NOVEL
2.	EACH : SOMEBODY; :		
	a) THAT - OH	d)	WHICH - WHOM
	b) GRACEFULLY - DANCE	e)	MAN - HE
	c) SING - SONG		
3.	PEAL : PEEL; :		
	a) STEAL - STILL	d)	GREAT - GREET
	b) FAIR - FARE	e)	MEAL - KNEEL
	c) BUY - VIE		
4.	HERD : CATTLE; :		
	a) COLONY - TERMITES	d)	SWARM - QUAIL
	b) PACK - PEACOCKS	e)	COVEY - WHALES
	c) HIVE - WOLVES		
5.	EPIC : ELEGY;:		
	a) ALLEGRO - PLOT	d)	DISSECT - PROTAGONIST
	b) SONATA - SATIRE	e)	COUPLET - SONNET
	c) RADAR - ALLEGORY		•
	GOLF : HOLE;:		
	a) BASEBALL - GLOVE	d)	TENNIS - RACKET
	b) ARCHERY - BULL'S EYE	e)	BASKETBALL - CENTER
	c) BOWLING - PIN		

7.	PROTEIN : MEAT;:	•
	a) ENERGY - SUGAR	d) STARCH - POTATOES
	b) CALORIES - WATER	e) FAT - CHOLESTEROL
	c) VITAMINS - MINERALS	
8.	FERN : PLANT; :	
	a) SHARK - WATER	d) GERM - DISEASE
	b) CAT - LION) DOG - ANIMAL
	c) COLLIE - BOXER	
9.	TRY : TRIED; :	
	a) CAME - COME	d) DEAD - DIED
	b) FLY-FLEW	e) SIT - SITTING
	c) GO - GONE	
10.	LION : CUB;	
	a) DUCK - DRAKE	d) GOAT-LAMB
	b) CHILD - BABY	e) DEER - VENISON
	c) HORSE-COLT	
11.	RABIES : DOGS; :	
	a) MALARIA - MOSQUITOES	d) AIDS - RAT
	b) FEVER - ANTS	e) LEPROSY -
	c) COUGH - WORMS	BUTTERFLIES
12.	GLOVES : HAND; :	
	a) WELDER - STEEL	d) HELMET - HEAD
	b) GUN - COMBAT	e) ARMY - SOLDIER
	c) FIELD - FOOTBALL	
13.	GUN : HOLSTER;	
	a) SWORD - SCABBARD	d) SWORD - CADET
	b) SWORD - SLAY	e) SWORD - WAR
	c) SWORD - BAYONET	

14.	CANV	AS : PAINTING; :	
	a)	CLAY - POTTERY	
	b)	CLAY - MOLD	
	c)	CLAY - ART	
15.	IRON :	SOLID;::	
	a)	WATER - GASEOUS	
	b)	WATER - PAIL	
	c)	WATER - COMPOUND	
	d)	WATER - ELEMENT	

and the second of the control of the

e) WATER - FLUID

- d) CLAY-STATUE
- e) CLAY BAKE



ANSWER KEY

75

SCIENCE

76

Chemistry

```
1. b, sublimation : solid to liquid
2. d
3. c
4. d, air is gaseous soln , gasoline= liquid soln, brass=solid, copper=element
5. b, intensive property: does not depend on the amt of substance/ sample
6. c, *(0K is absolute zero, the lowest attainable temp. Kelvin does not use °)
7. a
8. c
9. a
10. d
                                and the second production in Suites
11. b
12. b the rest normally exists as diatomic molecules
13. d
14. a
 15. c
                                                                 and the second of the
 16. b
17. b
18. d
19. c
20. d. ^{\circ}F = 9/5^{\circ}C + 32
21. e l.ll.lll
22. d, l, ll, and III are parts/steps in the scientific method (which is the general approach to
         problems)
23. d
24. d
                                                                and a college being particle.
25. c
26. a
27. e
28. c, following rules of significant figures
29. b, 0.1 = [(x g)(moles/ 158 g)] / 7.200L) t temperature
30. a, M_1V_1 = M_2V_2 \implies 12V_1 = 1*0.6
31. a
          C_2H_6 + 7/2 O_2 \rightarrow 2CO_2 + 3H_2O
         3.5 mol ethane * (4 moles CO_2 / 2 moles ethane) = 7 moles CO_2
         2.0 mol O_2 * (4 mole CO_2 / 7 moles O_2) = 1.1 moles CO_2
32. a. 0.5/1.1 = 0.45
33. b
34. c
35. a
                          The second of th
36. e
37. c
38. c, Cu<sup>2+</sup>, Zn
         LEORA = lose electrons Oxidation (gets oxidized) reducing agent
         GEROA = gain electrons Reduction (gets reduced) oxidizing agent
39. Answer: Given the statements the best answer would be b. ph of Sol'n B is 7 since equal
         volumes of HCI and NaOH react. All three solutions undergo a neutralization reaction with
         water and a salt (specifically NaCl) as product.
40. d
41. d, Boiling point Elevation. Boiling point temperature increases with increasing external
         pressure.
```

42. e, nota. High pressure and low temperature

化氯化物 医多种性畸形 化

MATHEMATICS

Simple Calculus

1. b,
$$4-x^2 >= 0$$

 $x^2 <= 4$
 $x <= 2$ and $x>= -2$

4. a,
$$\lim_{x\to 5} 3x - \lim_{x\to 5} 7$$

= $3*5 - 7 = 8$

11. a,
$$x = (5 + 1)/2$$
; $y = (-3 - 6)/2$
 $x = 3$; $y = -9/2$

12. d,
$$m = (-1-3)/(5-5) = -4/0$$

undefined

A Section

13. b,
$$m = (3 - (-3)) / (-2 - 6)$$

= -3/4
 $y - (-3) = (-3/4)*(x - 6)$
 $4y + 12 = -3x + 18$
 $3x + 4y - 6 = 0$

25. b,
$$\sqrt{(x^2 - 1)} > 0$$

 $x^2 - 1 > 0$
 $x^2 > 0$
 $x > 1$ and $x > 1$

26. b,
$$(12x^2y^4/3x^2y^2) + (18x^4y^2/2x^2y^2) - (36x^2y^2) = 4xy^2 + 6x^2 - 12y/x^2 = 6x$$

27. c,
$$(2x-3y)*(3x+4y)$$

3.4 .

F:
$$2x * 3x = 6x^2$$

O:
$$2x * 4y = 8xy$$

I: $-3y * 3x = -9xy$
L: $-3y * 4y = -12y^2$
 $6x^2 - xy - 12y^2$

28. a,
$$(3x+2y)[(3x)^2 - (3x)(2y) + (2y)^2]$$

= $(3x)^3 + (2y)^3 = 27x^3 + 8y^3$

30. d,
$$8x^4y^7 / 12x^6y^3 = 2y^4 / 3x^2$$

30. d,
$$8x^4y^7 / 12x^6y^3 = 2y^4 / 3x^2$$

31. b, $(a^{2*}a - b^{2*}b)/(ab) = (a^3 - b^3)/(ab)$

32. c,
$$(7/35)(20/12)(a/a^3)(b^5/b^3)$$

= $(1/5)(5/3)(1/a^2)(b^3)$
= $b^2/3a^2$

=
$$(b+a)(a+b)/(ab)$$

= $(a+b)^2/(ab)$

34. b,
$$(3^4)^{-3/4} = 3^{-3} = 1/27$$

35. c, $\sqrt[6]{(3^3)} = 3^{3/6} = 3^{1/2} = \sqrt{2}$

35. c,
$$\sqrt{3^3} = 3^{3/6} = 3^{1/2} = \sqrt{2}$$

36. a,
$$4\sqrt{3} - 5\sqrt{(4*3)} + 2\sqrt{(25*3)}$$

37. b,
$$(2^2)^{3x} = (2^4)^{x+1}$$

 $2^{6x} = 2^{4x+4}$

$$2^{6x} = 2^{4x+4}$$

$$\log_2 2^{6x} = \log_2 2^{4x+4}$$

$$2x = 4$$

$$x = 2$$

38. c,
$$x^4 = 1/16$$

65. d $x = \sqrt[4]{(1/16)}$

39. c,
$$(x+3)(x-3)/(x-3) = y$$

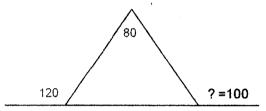
 $x = y-3$

Geometry

- 1. a, Surface area = $4\pi (2^2) = 50.26$
- 2. a. Solution 200cm = 2m

 $V=(1/3)(B)(h)=(1/3)(4)(2)=2.67 \text{ m}^3$

- 3. a, Supplement = 180-37 = 143, Complement=90-37= 53
- 4. d. Since AB and CD is not parallel and no sufficient data, we cannot determine the answer.
- 5. b.



- a. a. total area= $8(10)=80 \text{ cm}^2$. small rectangle area= 3x4=12 cm² Area= 80 cm² -12 cm²
- a, 2
- c. a, chord
- d. c
- e. b

Statistics

- 1. b
- 2. d
- 3. b
- 4. d
- 5. a
- a, mean = (1+2+3+4+5+6+7+8+9+10)/10 where (1+2+3+6+7+8+9+10)/10 where (1+2+3+6+7+8+9+10)/10 where (1+2+3+6+7+8+10)/10 where (1+2+3+6+7+10)/10 where (1+2+3+6+7+10)/10 where (1+2+3+6+7+10)/10 where (1+2+3+7+10)/10 whe =5.5 median = (5+6)/2=5.5
- 7. c, (7 is the most frequent element)
- 8. c
- 9. d
- 10. a
- 11. c
- 12. b
- 13. c
- 14. a
- 15. d

Trigonometry

- 1. c, $\sin x = 2/4$ $sinx = \frac{1}{2}$ $x=\sin^{-1}\frac{1}{2}=30^{\circ}$
- 2. a, $\sin \Theta / \cos \Theta = -1/2$ $-2\sin\Theta = \cos\Theta$ $\sin^2 \Theta + \cos^2 \Theta = 1$ $\sin^2 \Theta + 4 \sin^2 \Theta = 1$ $5 \sin^2 \Theta = 1$ $\sin \Theta = \pm 1/\sqrt{5}$ since $270^{\circ} \le \Theta \le 360^{\circ}$ $\sin \Theta = -1/\sqrt{5}$
- 3. c, $\sin x < 0 = 3^{rd}Q$ and $4^{th}Q$ tan $x = 1^{st}Q$ and $3^{rd}Q$ Therefore, 3rd Q
- 4. c. $\cos \Theta = x/r$ $1 + y^2 = 4$ $y^2 = 3$ $y = -\sqrt{3}$ cot Θ >0 at the 3rd Q P(-1, -√3) $\tan \Theta = -\sqrt{3}/-1 = \sqrt{3}$
- 5. d. $\sin 17\pi/4 = \sin (\pi/4 + 4\pi)$ $= \sin \pi/4 = 1/\sqrt{2}$
- c, $tan^2x cscx = (1/sinx)*(sin^2x/cos^2x)$ $= \sin x / \cos^2 x$ $= \sin x / (1 - \sin^2 x)$
- 7. **b**, $c^2 = a^2 + b^2 2ab \cos \alpha$ $4 = 4 + 1 - 2*2*1*\cos \alpha$ $4 - 5 = -2*2*1*\cos \alpha$ $1 = -4*\cos\alpha$ $\cos \alpha = \frac{1}{4}$
- $\sin \beta = \sin 30$ $\beta = \sin^{-1} \frac{1}{2}$ $\beta = 30$
- 9. c. $\sin 30 = x/\sqrt{3}$ $\frac{1}{2} = x/\sqrt{3}$ $x = \sqrt{3/2}$
- 10. b, $\cot \Theta = \cos \Theta / \sin \Theta = 1 / \tan \Theta$
- 11. b, $30* \pi/180 = 0.52$
- 12. c, $\cot \Theta = 1 / \tan \Theta$

the state of the s

 $(1 / \tan \Theta) / \tan \Theta = 1 / \tan^2 \Theta$ = $1/(\sin^2\Theta/\cos^2\Theta)$

 $= \cos^2 \Theta / \sin^2 \Theta$

Word Problems

```
1. e. n(n+1)/2 + m(m+1)/2 = (20)(20+1)/2 + (40)(40+1)/2 = 1030

2. d, F = P(1 + i) N
6000 = 4000 (1 + 0.50) N
log 6000 = log [4000 (1 + 0.50) N]
log 6000 = log 4000 + log[(1 + 0.50) N]
log 6000 = log 4000 + N log[(1 + 0.50) N]
N = (log 6000 - log 4000) / [log(1 + 0.50)]
N = [log (6000/4000)] / [log(1 + 0.50)]
```

50 July 380

 $N = \log 1.5 / \log 1.5$

N = 1

This year

- 3. c, (1/8 +1/7) T = 9 T = 33 hrs. 36 mins.
- 4. a, 60 km/hr 23 km/hr = 37 km/hr = relative velocity Velocity = dist./time
 37 = 100 / time
 Time = 2.702... hrs = 2 hrs, 42 min, 9.7 sec
- 5. b, 60 + 23 = 83 km/hr = relative velocity 83 = 100/ time Time = 1.2048... hrs = 1 hr. 12 min, 17.3 sec
- 6. e, Y = 60 km / hr * time X = 23 km /hr * time $Y^2 + X^2 = 100^2$ $(60t)^2 + (23t)^2 = 100^2$ $529t^2 + 3600t^2 = 100^2$ $4129t^2 = 100^2$ $t = 100/\sqrt{4129}$ hrs
- 7. d, V 15 = velocity relative to the observers (V-15)(60) = 20 $V = 15^{-1}/_3 \text{ ft/s}$
- 8. c. 1 ft/s = 10 ft / time1
 time1 = 10 s
 left for the rest of the distance = 50 sec
 V + 15 = velocity relative to observers
 (V+15)(50) = 10
 V= -14.8 ft/s

Ans: they don't need to row/go faster; flow of water will help them beat the time/mark

- 9. c, Discharge, Q=volume/time Q= $\pi r^2 h/t$ = $\pi (1)^2 3/(5^*60)$ = 0.01 π ft³/s
- 10. Q=VA V=Q/A = $(0.01\pi)/(1/4*\pi*0.25^2)$ = $0.64\pi^2$ ft/s
- 11. d, [1\12(8) + 1/9(6) + 1/11(5)] * days = 30 (2) days = 16.78 days = 17 days consumed

12. b, 20*19*18*17 = 116280 Ans: 1 is to 116280 chances

13. c, Dist. Traveled by 1^{st} plane, A= 100^*6 =600 km north from origin Dist. Traveled by 2^{nd} plane, B = 120^*6 =720 km 60° east of south Cosine law:

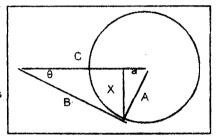
(dist from each other)² = $A^2 + B^2 - 2AB\cos 60^\circ$ = $600^2 + 720^2 - 2^*600^*720^*1/2$ = 446400

dist from each other = v446400 km = 668.13 km

14. e, A=100*6=600 km south from last position = origin
B=60*6=360 km north from last position = directly east of origin
dist. from each other = 720 km sin 60° =720 *(\sigma3/2)=360 \sigma3 km =624 km

15. e, Right triangles:
Radius, A = 3m
Distance, C=hypotenuse=5m
Other side, B =4m
Cos θ = B/C = 4/5
X = A cos θ
= 3 (4/5) = 12/5
= 2.4 m = radius of what the cameraman sees

Diameter of what the cameraman sees = 4.8m



- 16. b, X = 0.20 m A = 3 m $Cos \theta = 0.20/3$ $a^2 = X^2 + A^2$ $= 0.20^2 + 3^2 = 9.04$ $a = \sqrt{9.04}$ by similar triangles: a/A = A/C $\sqrt{9.04/3} = 3/C$ C, distance of camera man = $9/\sqrt{9.04}$ m = 3m
- 17. c, let x = number of Php0.25 coins
 y = number of Php1.00 coins
 x+y = 128
 0.25x + y = 86
 (1)
 0.25x + y = 86
 (1)
 -(2)
 -(3//)
 x = 56
 y = 128 56 = 72
- 18. a, let x = edad ni Ana ngayon y = edad ng anak ni Ana ngayon x - 5 = 7(y - 5) — x - 7y = -30 — (1) x + 10 = 2(y + 10) — x - 2y = 10 — (2) (1) — (2) — x - 5y = x - 40 y = 8x = 2y + 10 = 26
- 19. a, let c = hrs Che can do the work alone
 m = hrs May can do the work alone
 6/c + 6/m = 1 -(1)
 3/m + 12/c = 1 6/m + 24/c = 2 -(2)
 (1) -(2) c = 18, m = 9
- 20. b, let x = halaga na in-invest sa 9%

 y = halaga na in-invest sa 7%

 x + y = 1 000 000

 -(1)

 0.09x + 0.07y = 86 000 ----- (9/7)x + y = 86 000 / 0.07

 (1) (2) ----- x = 800 000

ENGLISH

12 h

_				
<i></i>	~	-	***	•
G	ы	88		81

GIE	ımmar		
		Context	Reading
1.	е		
2.	b	Clues	1. b
3.	е		2. C
4.	C		2. C
	b	1. a	4. b
6.	C	2 . b	- - 5 . a
7.	е	3. C	6. b
8.	b.	4. d	7. b
9.		5 . b	
10.	b, illustrations,	6. c	8. a
11.	е	7. b	9. b
12.		8. a	10. c 11. c
13.		9. c	
14.		10. b	12. d
15.	a, ignored	11. a	13. d
16.	c, has	12. b	14. d
17.	a, finally,	13. c	15. c
18.	b	14. b	16. b
19.	е	15. c	17. a
20.	d	16. a	18. d
21.	b, 20-minute	17. c	19. c
22.	d, two-storey	18. d	20 . b
23.	b, moved	19. d	
24.	е	20 . c	
25.	a, were	21. c	
	a, came	22 . b	Constraint Services
27.	c, to rest	23. b	
28.	a, toward	24. d	
29.	e	25. c	
30.	c, learning,	26. b	
31.	b, half-frozen	27. b	# 1997 - 1
32 .	c, me	28. d	
33.	b, they're	29. a	
	b, lies	30. d	
		31. a	3 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
		32. d	
	•	33. d	
		34. C	
		35. a	

Analogy

1. b 1. c 2. d 2. c 3. c 4. b 6. b 6. b 7. d 7. b 8. a 9. b 9. b 10. c 10. c 11. c 11. a 12. d 12. d 13. d 13. a 14. d 14 a 15. c 16. b 17. a