MOCK BOARD EXAMINATION IN
GENERAL AND APPLIED SCIENCE
(April 25, 2009)

1) A fixed support can handle a / an _____
   a. Axial Load
   b. Transverse Force
   c. Lending Moment
   d. All of the preceding *
2) The difference between the market value of the share and its face value is called
   a. Profit or Margin
   b. Premium*
   c. Deficit
   d. Surplus
3) The present worth of P9,300 due 15 years hence with interest rate of 8% compounded quarterly is ___
   a. P 2,834.75 *
   b. P 2,384.75
   c. P 3,824.57
   d. P 8,234.75
4) A flowerpot falls off the ledge of a fifth floor window, just as it passes the third floor window, someone accidentally drops off a glass of water from the window. Which of the following statements is true?
   a. The flowerpot hits the ground first and with a higher speed than the glass.*
   b. The flowerpot and the glass will land at the same instant and speed.
   c. The glass hits the ground before the flower pot does.
   d. It is impossible to determine which object will hit the ground due to insufficient data.
5) Two bodies, each having a mass of 450 milligrams are separated in space a distance of 10 kilometers apart. The force exerted on each other due to gravitation is _____ Newtons.
   a. 1.35×10^{-7}
   b. 1.35×10^{-19} *
   c. 1.35×10^{-9}
   d. 1.35×10^{-18}
6) At Guimaras Island where orchards abound, an extra large mango falls from a branch five (5) meters above the ground. Assuming a "g" of 9.81 m/sec^2, the speed of the falling mango is ___ meters/second as it strikes the ground.
   a. 9.905 *
   b. 14.905
   c. 12.905
   d. 8.905
7) In a funny movie, a man in a hot air balloon, 150 meters from the ground drops a bottle of coke that made the life of African tribesmen in great trouble. If the balloon is rising at 15 meters per second, the highest point reached by the bottle is ___ meters.
   a. 141.50
   b. 151.50
   c. 161.50 *
   d. 171.50
8) Is the unit of illuminance or illumination on a one square meter surface area on which there is a luminous flux of one lumen uniformly distributed, or the illumination on a surface all points of which are one meter away from a point source of 1 candela.
   a. Lux *
   b. Phot
   c. Stilb
   d. Brillouin
9) One gauss is equivalent to
   a. 1×10^{-4} Tesla *
   b. 79.5774 Oersteds
   c. 100 maxwells
   d. 10^{-5} webers
10) The measure of the resistance of an object to a changed in its state of motion is called _____
   a. Momentum
   b. mass*
   c. inertia
   d. velocity
11) Refers to the agreement of a particular value with the true value.
   a. Precision
   b. Error

c. Tolerante
d. accuracy*

12) The amount of heat which is absorbed during the change of state of a substance without rise in its temperature is called its _____.
a. Specific heat
b. Latent heat*
c. Thermal conductivity
d. Water equivalent

13) The scientist who systematically demonstrated the equivalence of mechanical energy and heat was _____.
a. Joule*
b. Boltzmann
c. Faraday
d. Kelvin

14) Momentum is a property related to the object's _____
a. motion and mass*
b. mass and acceleration
c. motion and weight
d. weight and velocity

15) The study of motion without reference. to the force that causes the motion is known as_____.
a. Statics
b. Dynamics
c. Kinetics
d. kinematics*

16) A vapor that is about to condense is called _____.
a. saturated vapor*
b. plasma
c. super heated vapor
d. saturated liquid

17) At a given pressure, the temperature at which pure substance changes phase is called ____.
a. critical temperature
b. saturation temperature*
c. triple point
d. kindling temperature

18) When a body is resistant to heat, it is called ____.
a. Thermoscopic
b. Thermotropic
c. thermoduric*
d. thermoplastic

19) The property of fluids by virtue of which they offer resistance to flow is known as _____.
a. Gummosity
b. Glutinosity
c. Viscidity
d. viscosity*

20) The condition under which the stress is constant or uniform is known as ____.
a. Simple stress*
b. Shearing stress
c. Tangential stress
d. Normal stress

21) The highest ordinate on the stress-strain curve is called _____.
a. rupture stress
b. elastic limit
c. ultimate stress or ultimate strength*
d. proportional limit

22) Estimated value of the property at the end of the useful life.
a. Market value
b. Fair value
c. Salvage value*
d. Book value

23) Determination of the actual quantity of the materials on hand as of a given date.
a. physical inventory*
b. counting principle
c. stock assessment
d. periodic material update

24) The last step in Decision making process is to_____.
a. Analyze environment
b. Make a choice
c. Diagnose problem
d. Evaluate and adapt decision results*

25) Refers to evaluation of alternatives using intuition and subjective judgment.
a. Quantitative evaluation
b. Qualitative evaluation*
c. Relative evaluation
d. Subjective evaluation

26) A novation where the principal conditions of the obligation is changed.
a. True novation
b. Real novation*
c. Personal novation
d. Substitute novation

27) "A" obliged himself to deliver to "B" a car. Subsequently,. they entered into another contract whereby instead of

"A"delivering a car, "A" would deliver a truck. This illustrates:
   a. True novation
   b. Real novation*
   c. Personal novation
   d. Substitute novation

28) Smoking and storing of inflammable materials is prohibited in battery rooms and "NO SMOKING" signs should be posted _____.
   a. inside the room only
   b. before entering battery rooms
   c. outside the room only
   d. Both A and C*

29) An acid neutralizing agent such as ____ should be stored and available in battery rooms for use in accidental electrolyte or acid spillage.
   a. Oil
   b. Kerosene
   c. Flour
   d. Caustic soda*

30) A type of distribution system comprised of two components which are distribution ducts and feeder (header) ducts and may be designed into a one or two-level system, depending on the floor structure.
   a. Conduit system
   b. Under floor duct system*
   c. Ceiling system
   d. Cellular floor system

31) Type of distribution system that serves the same floor where the cables (wires) are placed within the ceiling and brought down to desk locations.
   a. Conduit system
   b. Under floor duct system
   c. Ceiling system*
   d. Cellular floor system

32) The members of the Board shall hold office for a term of ____ years from date of appointment or until their successors shall have been appointed and qualified and may be re-appointed once for another term.
   a. 7 years
   b. 10 years
   c. 5 years
   d. 3 years*

33) To pass the licensure examination, a candidate for Electronics Engineer or Electronics Technician must obtain a passing rating of ____ in each subject given during the examination.
   a. 50%
   b. 60%
   c. 70% *
   d. 80%

34) One shall be allowed to take one removal examination on the subject/s where he/she failed to obtain the passing rating. Provided, however, that a candidate who obtains a passing rating in the majority of the subjects but obtains a rating in the other subject/s.
   a. below 70% but not lower than 60% *
   b. below 70% but not lower than 50%
   c. below 60% but not lower than 50%
   d. below 75% but not lower than 60%

35) An applicant for Professional Electronics must have a certified experience record of active self-practice and/or employment either in government service or in the private sector, in the format to be prescribed by the Board, indicating the inclusive dates, companies worked for, description of specific responsibilities, relevant accomplishments and name, position of immediate supervisors for a period of at least ____ years (inclusive and/or aggregate), at least _____ years of which are in responsible charge of significant engineering work, from the date applicant took his/her oath as an Electronics and Communications Engineer or Electronics Engineer.
   a. 10 years; 3 years
   b. 7 years; 2 years *
   c. 5 years; 2 years
   d. 10 years; 2 years

36) A commercial following the close of the program is called:
   a. A. cow-catcher
   b. hitch-hiker*
   c. lead commercial
   d. sweeper

37) Commercial load for radio shall not exceed ___ for one hour program in Metro Manila.
   a. 15 min*

b. 17 min
c. 18 min
d. 20 min

38) A half-hour program shall have a maximum of ____ commercial minutes within Metro Manila.
a. 15 min
b. 7 min and 30 sec*
c. 3 min and 30 sec
d. 1 min and 15 sec

39) A quarter-hour program shall not exceed ____ commercial minutes within Metro Manila.
a. 15 min
b. 7 min and 30 sec
c. 3 min and 30 sec*
d. 1 min and 15 sec

40) A five-minute program shall have a maximum of _____ commercial minutes within Metro Manila.
a. 15 min
b. 7 min and 30 sec
c. 3 min and 30 sec
d. 1 min and 15 sec*

41) The spectrum user fee FOR PAIRED 3G RADIO FREQUENCY BANDS for each additional 1 MHz or fraction thereof in excess of the first 5MHz but not exceeding 10Mhz is ____.
a. PhP5,000,000.00 per MHz
b. PhP15,000,000.00 per MHz
c. PhP8,000,000.00 per MHz*
d. PhP10,000,000.00 per MHz

42) The spectrum user fee FOR PAIRED 3G RADIO FREQUENCY BANDS for each additional 1 MHz or fraction thereof in excess of the first 10MHz but not exceeding 15Mhz is ____.
a. PhP5,000,000.00 per MHz
b. PhP15,000,000.00 per MHz
c. PhP8,000,000.00 per MHz
d. PhP10,000,000.00 per MHz*

43) The spectrum user fee FOR PAIRED 3G RADIO FREQUENCY BANDS for each additional 1 MHz or fraction thereof in excess of the first 15MHz ____.
a. PhP5,000,000.00 per MHz
b. PhP15,000,000.00 per MHz*
c. PhP8,000,000.00 per MHz
d. PhP10,000,000.00 per MHz

44) The spectrum user fee FOR UNPAIRED 3G RADIO FREQUENCY BANDS for the first 5MHz is _____.
a. PhP3,000,000.00 per MHz*
b. PhP8,000,000.00 per MHz
c. PhP6,000,000.00 per MHz
d. PhP12,000,000.00 per MHz

45) The spectrum user fee FOR UNPAIRED 3G RADIO FREQUENCY BANDS for each additional 1 MHz or fraction thereof in excess of the first 5MHz but not exceeding 10Mhz is ____.
a. PhP3,000,000.00 per MHz
b. PhP8,000,000.00 per MHz
c. PhP6,000,000.00 per MHz*
d. PhP12,000,000.00 per MHz

46) At an interest rate of 10% compounded annually, how much will a deposit of P 1500 be in 15 years?
a. P 6, 100.00
b. P 6, 234.09
c. P 6, 265.87*
d. P 6, 437.90

47) What is the force in Newtons, required to move a car with 1000 kg. Mass with an acceleration of 12.0 meters/sec?
a. 12 000 N*
b. 30 000 N
c. 8 000 N
d. 6 000 N

48) At 10% interest rate, how much should you invest today to be able to withdraw P10 000 at the end of 10 years?
a. P 4 855.43
b. P 5 855.43
c. P 3 855.43*
d. P6 855.43

49) Two lead balls whose masses are 5 kg and 0.5 kg are placed with their center 50 cm apart. With what force do they attract each other?
a. 6.67×10^{-10} N*
b. 6.67×10^{-11} N
c. 6.67×10^{-8} N
d. 6.67×10^{-9} N

50) P 1 000 becomes P 1500 in three years. Find the simple interest rate.
a. 16.67%*
b. 15.67%
c. 17.67%
d. 18.67%

51) Find the least number of years required to double a certain amount of money at 5% per annum compound interest to the nearest year.
   a. 14 years*
   b. 12 years
   c. 18 years
   d. 20 years
52) What is the accumulated amount after 3 years of P 6500 invested at the rate of 12% per year compounded semi-annually?
   a. P 9220.37*
   b. P 9332.37
   c. P 9753.37
   d. P 9243.37
53) It is a beam whereby one end is fixed and the other end is free.
   a. propped beam
   b. simple beam
   c. cantilever beam*
   d. fixed and beam
54) A body fired from the ground at an inclination of 30° with the horizontal, attained a maximum height of 500m. The body stayed in air for how many seconds?
   a. 20.2 secs*
   b. 30.5 secs
   c. 15.4 secs
   d. 25.4 secs
55) A 50 mm. diameter solid circular shaft was stressed by 40 MPa when transmitting power at 1200 rpm. If G = 100GPa, what horsepower is transmitted?
   a. 156.5 h.p.
   b. 165.36 h.p.*
   c. 136.55 h.p.
   d. 155.6 h.p.
56) An object was dropped from a height of 50 m. At the same instant, another object was fired vertically from the ground at an initial velocity of 20 m/s. when will the two object be at same level?
   a. 4.5 secs.
   b. 5.5 secs.
   c. 2.5 secs.*
   d. 3.5 secs.
57) A bond whereby the security behind it are the equipments of the issuing corporation.
   a. debenture bond
   b. mortgage bond
   c. collateral bond
   d. lien bond *
58) It is the stress development when a force is directed away from a resisting area.
   a. tensile stress*
   b. axial stress
   c. compressive stress
   d. shearing stress
59) A stone will be dropped from a bridge where a small boat is approaching. The bridge is 15 m high and the boat has a constant velocity of 10 kph. How far from the bridge must the stone be dropped to insure hitting the boat?
   a. 7.85 m
   b. 6.15 m
   c. 4.86 m*
   d. 8.07 m
60) The actual interest earned by a given principal is known as ___.
   a. nominal interest
   b. effective interest*
   c. compounded interest
   d. simple interest
61) An object is fired vertically and reached a maximum height of 100 m. How long was it in air?
   a. 9.03 secs.*
   b. 4.51 secs.
   c. 10.5 secs.
   d. 5.4 secs.
62) What is the equivalent in terms of interest compounded daily is 16% compounded quarterly?
   a. 17.2 %
   b. 14.5 %
   c. 16.2 %
   d. 15.7 %*
63) An annuity whereby payment is postponed for a certain period of time is known as____.
   a. annuity due
   b. Deferred Annuity*
   c. Ordinary annuity
   d. Perpetuity

64) It is a single force that has the same effect as a system of forces.
   a. Moment
   b. Equilibrium
   c. force couple
   d. resultant*
65) If P 200, 000 must be available in 10 years by depositing equal amount monthly for 6 years, what must each monthly deposit be to attain this goal if nominal interest is 18%.
   a. P 625.40
   b. P 910.60
   c. P 764.17*
   d. P 815.50
66) Refers to the degree of agreement among several measurements of the same quantity.
   a. Accuracy
   b. precisión *
   c. error
   d. margin
67) A property of matter that is often used by chemist as an "identification tag" for a substance.
   a. Mass
   b. Molarity
   c. density*
   d. volume
68) Protons and neutrons can be broken down further into elementary particles called ____.
   a. quarks *
   b. ions
   c. isotope
   d. warks
69) The principle of the constant composition of compounds, originally called "Proust's Law" is now known as
   a. The law of multiple proportion
   b. The law of definite proportion*
   c. The law of conservation of mass
   d. The law of compounds
70) On a sunny day at the beach, the sand gets so hot and the water stays relatively cool is due to the difference in of water and sand.
   a. Density
   b. specific heat*
   c. depth
   d. thermal conductivity
71) The instrument, which measures temperature by radiation, is called ___.
   a. Thermopile
   b. thermometer
   c. pyrometer*
   d. hydrometer
72) When the temperature of an ideal gas is increased at constant pressure,
   a. the potential energy of molecules increases
   b. the potential energy of molecules decreases
   c. the kinetic energy of molecules increases*
   d. the kinetic energy of molecules decreases
73) The root mean square speed of the molecules of a gas is ___.
   a. independent of its pressure P
   b. directly proportional to square root of P
   c. directly proportional to the square of its temperature T*
   d. proportional to T
74) Varignon's theorem is used to determine ____.
   a. location of centroid*
   b. moment of inertia
   c. mass moment of inertia
   d. moment of area
75) The periodic oscillations either up or down or back and fourth motion in the straight line is known as _____.
   a. transverse harmonic motion
   b. resonance
   c. rotational harmonic motion
   d. translational harmonic motion*
76) A freely falling body is a body in rectilinear motion and with constant _____.
   a. Velocity
   b. Speed
   c. Deceleration
   d. acceleration*
77) When the total kinetic energy of the system is the same as before and after the collision of two bodies, it is called ___.
   a. Static collision
   b. Elastic collision*
   c. Inelastic collision

d. Plastic collision

78) At a given temperature, the pressure at which a pure substance changes phase is called ____.
   a. critical pressure
   b. saturation pressure*
   c. absolute pressure
   d. vacuum pressure

79) The amount of energy absorbed during melting and is equivalent to the amount of energy released during freezing is called _____.
   a. latent heat of vaporization
   b. melting energy
   c. latent heat of fusion*
   d. specific heat

80) The amount of energy absorbed during vaporization and is equivalent to the amount of energy released during condensation is called _____.
   a. latent heat of vaporization*
   b. melting energy
   c. latent heat of fusion
   d. specific heat

81) A process during which there is no heat transfer is called _____.
   a. isentropic process
   b. isothermal process
   c. adiabatic process
   d. isometric process*

82) The tendency of a body to return to its original size or shape after having been deformed is called _____.
   a. Elastance
   b. elasticity*
   c. elastivity
   d. anelastivity

83) The emission of light by a material because of its high temperature is known as ___.
   a. incandescence*
   b. luminescence
   c. scintillation
   d. phosphorescence

84) Which of the following statements is correct concerning the passage of white light into a glass prism?
   a. The violet color travels faster than the red color
   b. The violet color travels slower than the red color*
   c. All the colors of white light travel with the same speed
   d. Greater the wavelength, slower the speed of color

85) The property of an isolated conductor to store electric charge is _____.
   a. capacitance*
   b. conductance
   c. permeability
   d. accumulation

86) If the properties of a body are the same in all directions, it is called ___.
   a. Isodynamic
   b. isotropic*
   c. isogonic
   d. isotopic

87) The property of an object that determines the direction of heat flow when in contact with another object is called ____.
   a. Calidity
   b. Pyrexia
   c. Caloric
   d. temperature*

88) The rate of flow of thermal energy through a material in the presence of a temperature gradient is called ___.
   a. thermal capacity
   b. thermal conductivity*
   c. thermal radiation
   d. thermal convection

89) Shearing stress is also known as____.
   a. Simple stress
   b. Shearing stress
   c. Tangential stress *
   d. Normal stress

90) Stress caused by forces perpendicular to the areas on which they act is called _____.
   a. Simple stress
   b. Shearing stress
   c. Tangential stress
   d. Normal stress*

91) What type of stress is produced whenever the applied load cause one section of a body to tend to slide past its adjacent section?
   a. normal stress
   b. sliding stress
   c. shearing stress*
   d. bearing stress

92) Under guidelines for the registration of VoIP service providers and resellers, the code for local access 3G network provider is _____.
   a. 306
   b. 303
   c. 400 *
   d. 405
93) Refers to the rules and regulation on the allocation and assignment of 3G radio frequency bands.
   a. MC No. 3-11-2005
   b. MC No. 07-08-2005 *
   c. MC No. 06-08-2005
   d. MC No. 03-03-2005
94) The standard name for 3G mobile telecommunications is _____.
   a. WCDMA
   b. CDMA 2000
   c. DECT
   d. IMT 2000*
95) AII applicants for the assignment of 3G radio frequency bands shall post performance bond equivalent to _____.
   a. PHP100M
   b. PHP200M
   c. PHP500M
   d. PHP300M*
96) The spectrum user fee FOR PAIRED 3G RADIO FREQUENCY BANDS for the first 5MHz is _____.
   a. PhP5,000,000.00 per MHz*
   b. PhP15,000,000.00 per MHz
   c. PhP8,000,000.00 per MHz
   d. PhP10,000,000.00 per MHz
97) RA 9292 is a consolidation of House Bill No.____ and Senate Bill No. ___.
   a. 5224; 2683*
   b. 5447;458
   c. 5734; 109
   d. 5533;4552
98) RA 9292 was finally passed by the House of Representatives and the Senate on ____.
   a. February 2, 2004 *
   b. March 2, 2007
   c. April 17, 2004
   d. March 5, 2005
99) RA 9292 was approved on _____.
   a. April 17, 2004*
   b. April 27, 2004
   c. March 17, 2005
   d. March 27, 2004
100) The effectivity of RA 9292 was on _____.
   a. April 17, 2004
   b. April 27, 2004
   c. May 24, 2004*
   d. May 28, 2004

ANSWERS AND SOLUTIONS:

46. C. P6 265.87
Sol'n: $F = P(1 + i)^n = 1500\ (1 + 0.10)^{15} =$ P6 265.87

47. A 12 000N
Sol'n: Using D'Alembert's Principle: $F = ma = (1000\ kg)\ (12) = 12\ 000\ N$

48. C P3 855.43
Sol'n: $F = P\ (1 + i)^n$; $10000 = P\ (1 + 0.10)^{10}$ P = P3 855.43

49. A 6.67×10^{-10}
Sol'n: $F = G\ [(m_1 m_2) / d^2]$ $F = (6.67 \times 10^{-11})\ [(5)(0.5) / (0.05)^2]$ $F = 6.67 \times 10^{-10}\ N = 6.67 \times 10^{-10}$

50. A 16.67%
Sol'n: $F = P + i = P + Pin$ $1500 = 100 + 1000\ i\ (3)$; $500 = 3000\ i$ i = 16.67%

51. A 14 yrs
Sol'n: $F = P\ (1 + i)^n$; $2P = P\ (1 + 0.05)^n$ $2 = (1 + 0.05)^n \rightarrow$ Take the natural logarithm of both sides $\ln 2 = n \ln 1.05$; $n = \ln 2 / \ln 1.05 = 14.2$ yrs say 14 years (nearly doubled)

52. A P 9220.37
Sol'n: $F = P\ (1 + i)^n = 6500\ [1 + (0.12 / 2)]^{6\ \text{semi-annuals}}$ P = P 9220.37