LEVEL: Bachelor in Biomedical Engineering

(1) He is the _____ of two brothers.

[a] bad   [b] worse   [c] worst   [d] more bad

(2) He _____ is down needs fear no fall.

[a] that   [b] whom   [c] who   [d] which

(3) I am confident _____ success.

[a] for   [b] about   [c] of   [d] to.

(4) They fear he may spoil his _____

[a] carrier   [b] career   [c] courier   [d] none

(5) None can put-up _____ such insult.

[a] at   [b] against   [c] with   [d] through

(6) There is _____ little hope of his recovery.

[a] a   [b] the   [c] none   [d] no

(7) "Did you ever beat him?" The passive voice of which is:

[a] Were you ever beaten by him?   [b] Was he beaten ever by you?

[c] Was he ever beaten by you?   [d] Had he ever been beaten by you?

(8) He _____ to Japan twice in his life.

[a] was gone   [b] had gone   [c] had been   [d] went

(9) None was found 'guilty _____ ?

[a] was he   [b] were they   [c] weren't they   [d] none

(10) Neither of two men _____ a pen.

[a] had   [b] has   [c] have   [d] has had

(11) Indirect speech of _____ the boy said, "Good morning!".

[a] The boy said good morning   [b] The boy bade good morning

[c] The boy expressed good morning   [d] The boy told that it was good morning

(12) The word "systematic" has its stress on _____ syllable.

[a] 1st   [b] 2nd   [c] 3rd   [d] 4th

(13) Mr. Kisan is _____ member of the committee.

[a] a   [b] the   [c] one of the   [d] none

(14) The sentence "He often comes late, doesn't he?" has _____ tone.

[a] rising   [b] rising and falling   [c] falling and rising   [d] falling

(15) The word 'starch' has the same final sound as _____ .

[a] monarch   [b] parch   [c] watch   [d] petrarch

(16) He had his beard _____

[a] to shave   [b] shave   [c] shaved   [d] to be shaved

(17) The child has been crying _____ morning.

[a] for   [b] from   [c] since   [d] whole

(18) If you _____ slow, you will not meet an accident.

[a] drive   [b] will drive   [c] drove   [d] an accident

(19) If I _____ there, I could save the child.

[a] had been   [b] was   [c] were   [d] had gone

(20) Make hay _____ the sun shines.

[a] when   [b] if   [c] while   [d] during

DIRECTION: Tick the correct answer.

(21) The value of $\lim\limits_{x \to 1} \dfrac{x^2 - \sqrt{x}}{\sqrt{x} - 1}$ is equal to

[a] 1   [b] 2   [c] 3   [d] 4

(22) The value of the $\lim\limits_{x \to \frac{\pi}{2}} \dfrac{\cos x}{x - \frac{\pi}{2}}$ is equal to

[a] −1   [b] 1   [c] $\dfrac{\pi}{2}$ [d] 0

(23) Derivative of $e^{\log}(\sin^{-1}x^2)$ is

[a] $\log(\sin^{-1}x^2)$ [b] $\dfrac{1}{x^2}$ [c] $\dfrac{2x}{\sqrt{1 - x^4}}$ [d] None of these

(24) The slope of the tangent to the curve $y = (\sin 2x + \cot x + 2)^2$ at $x = \dfrac{\pi}{2}$ is

[a] −12   [b] 12   [c] 1   [d] none of these

(25) Find two numbers whose sum is 16 and sum of whose cubes is minimum.

[a] 4 and 12   [b] 2 and 14   [c] 8 and 8   [d] 6 and 10

(26) $\int \sin^{-1}(\cos x)\,dx$ is equal to

[a] $\dfrac{\pi}{2} + c$ [b] $\dfrac{\pi x}{2} + c$ [c] $\dfrac{\pi x}{2} - \dfrac{x^2}{2} + C$ [d] $\dfrac{x^2}{2} + c$

(27) $\int \dfrac{dx}{1 + \sqrt{x}}$ is equal to

[a] $2x - 2\log(1+x) + c$ [b] $\log(1 + \sqrt{x})$

[c] $2\sqrt{x} - 2\log(1 + \sqrt{x}) + c$ [d] $\dfrac{2\sqrt{x}}{2\log(1 + \sqrt{x})} + c$

(28) The order and degree of the differential equation $a\dfrac{d^2y}{dx^2} = \left\{1 + \left(\dfrac{dy}{dx}\right)^2\right\}^{\frac{1}{2}}$ is given as

[a] order − 2 & degree − 2   [b] order − 2 & degree − 1
[c] order − 1 & degree − 1   [d] order − 2 & degree − 4

(29) The sum of an infinite G.P. is 8. If its second term is 2, then its common ratio is

[a] 2   [b] $\dfrac{1}{2}$ [c] 1   [d] $\dfrac{2}{3}$

(30) In how many ways can a party of 4 men and 4 women be seated at a circular table so that no two women are adjacent?

[a] 6   [b] 144   [c] 24   [d] 120

(31) Which term in the expansion of $\left(x^2 + \dfrac{1}{x}\right)^9$ is independent of x

[a] 7th term   [b] 6th term   [c] 4th term   [d] 5th term

(32) The conjugate of $-3 + \sqrt{-4}$ is
[a] $-3 + 2i$ [b] $3 - 2i$ [c] $-3 - 2i$ [d] $3 + 2i$

(33) If the angle between two lines is $\dfrac{\pi}{4}$ and slope of one line is $\dfrac{1}{2}$ then slope of the other line is

[a] $\dfrac{1}{2}$ [b] 1   [c] 2   [d] $\dfrac{1}{3}$

(34) The radius of the circle $3x^2 + 3y^2 + 12x - 18y - 11 = 0$ is

[a] $\dfrac{20}{\sqrt{3}}$ [b] $\sqrt{\dfrac{25}{3}}$ [c] $\sqrt{\dfrac{50}{3}}$ [d] $\dfrac{50}{\sqrt{3}}$

(35) The equation of a parabola is $y^2 = -12x$. The length of its latus-rectum is
[a] 12   [b] −12   [c] 3   [d] 0

(36) The length of lauts rectum of the ellipse $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ is

[a] $\dfrac{2b^2}{a}$ [b] $\dfrac{2a^2}{b}$ [c] $\dfrac{a}{b}$ [d] $\dfrac{a^2}{b}$

(37) The projection of $\vec{a} = i - 2\vec{j} + k$ on the vector $\vec{b} = 4i - 4j + 7k$ is

[a] $\dfrac{1}{9}$ [b] $\dfrac{1}{19}$ [c] $\dfrac{9}{19}$ [d] $\dfrac{19}{9}$

(38) Area of the triangle whose adjacent sides are given by the vectors $\vec{a} = 3i + 2j$ and $\vec{b} = 2j - 4k$ is

[a] $\sqrt{51}$ [b] $\sqrt{61}$ [c] 51   [d] 61

(39) The direction cosines of x-axis is

[a] (0, 0, 0)   [b] (1, 0, 0)   [c] (1, 1, 1)   [d] (1, 2, 3)

(40) A coin is tossed successively three times. The probability of getting at most 2 heads is:

[a] $\dfrac{3}{8}$ [b] $\dfrac{1}{2}$ [c] $\dfrac{7}{8}$ [d] none of these

(41) Chemical bond implies

[a] repulsion   [b] attraction

[c] attraction and repulsion balanced at a particular distance   [d] attraction and repulsion

(42) Rutherford's scattering experiment led to the conclusion that:

[a] nucleus is very small in size   [b] nucleus is a rigid part

[c] most of the space in the atom is empty   [d] nucleus contains neutrons

(43) According to second law of thermodynamics, a reaction is spontaneous, if during the process.

[a] ΔS universe > 0   [b] ΔS universe = 0   [c] ΔS universe = ΔS system   [d] ΔH system>0

(44) What is correct about ionic product of an electrolyte?

[a] it is always equal to it's solubility product   [b] can be < or equal to Ksp

[c] always < Ksp   [d] can be < or equal to or>Ksp

(45) The oxidation number of sulphur is S_8, S_2F_2 and H_2S respectively are.

[a] 0,+1 and -2   [b] +2, +1 and -2   [c] 0, +1 and +2   [d] -2, +1 and -2

(46) How much water is needed to dilute 10 ml of 10N hydrochloric acid to make it exactly decinormal?

[a] 990 ml   [b] 1000 ml   [c] 1010 ml   [d] 100 ml

(47) IUPAC name of CH_3CH (OH) COOH is:

[a] lactic acid   [b] α-hydroxyl propionica acid

[c] carboxy propanol   [d] 2-hydroxyl propanoic acid.

(48) Which of the following is not an isomer of butanal?

[a] 2-butanone   [b] 2-methyl propanal   [c] 2-butanol   [d] but-2-ene-1-ol

(49) When propyne is treated with aq. sulphuric acid in presence of $HgSO_4$, the major product is:

[a] propanal   [b] n-propyl hydrogen sulphate   [c] acetone   [d] propanol

(50) The bayer's reagent is:

[a] alkaline potassium permanganate solution   [b] acidified permanganate solution

[c] neutral permanganate solution   [d] aqueous bromine solution

(51) Grignard reagent on reaction with acetone forms

[a] tertiary alcohol   [b] secondary alcohol   [c] primary alcohol   [d] acetic acid

(52) $2HCHO + 50\% NaOH \rightarrow CH_3OH + HCOONa$, the above reaction is an example of:

[a] Rosenmund's reduction   [b] Kolbe's reaction

[c] Etard's reaction   [d] Cannizaro reaction

(53) The alkaline hydrolysis of ester is also called as:

[a] etherification   [b] nitrification

[c] alcoholysis   [d] saponification

(54) Which of the following substance will not produce methane by it's treatment with methyl magnesium iodide?

[a] ethanol   [b] acetone   [c] water   [d] ethyle amine

(55) The presence of three unpaired electrons in nitrogen atom is explained by:

[a] Paulie's exclusion principle   [b] Aufbau principle

[c] Uncertainty principle   [d] Hund's rule

(56) A metal M having electronic configuration M --- $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^1$, is

[a] s-block element   [b] p-block   [c] d-block element   [d] f-block element

(57) Which of the following is true for an adiabatic process

[a] $\Delta H = 0$ [b] $\Delta W = 0$ [c] $\Delta Q = 0$ [d] $\Delta V = 0$

(58) Melting of zinc metal and then pouring it into cold water gives

[a] zinc dust   [b] granulated zinc   [c] hard zinc metal   [d] soft zinc

(59) Sodium thiosulphate solution is used in photography to:

[a] reduce silver bromide to silver

[b] convert metallic silver to silver salt

[c] remove and decompose AgBr as a soluble silver thiosulphate complex

[d] remove reduced silver

(60) The pH of 0.001 M Ba $(OH)_2$ solution is

[a] 10.3   [b] 11.3   [c] 12.3   [d] 9

(61) The value of surface tension is 70 dyne/cm. what will be its value in N/m?

[a] 7 N/m   [b] 70 N/m   [c] 7×10^2 N/m   [d] 7×10^{-2} N/m

(62) In a streamline flow, if the gravitational head is h, then kinetic and pressure heads are

[a] $\frac{v^2}{g}$ and $\frac{p}{\rho}$ [b] $\frac{v^2}{2g}$ and $\frac{p}{\rho g}$ [c] $\frac{v^2}{2}$ and $\frac{p}{\rho}$ [d] $\frac{v^2}{2}$ and $\frac{p}{\rho g}$

(63) In thermal equilibrium the average velocity of gas molecule is

[a] proportional to T   [b] proportional to $\sqrt{T}$ [c] proportional to T^2 [d] equal to zero

(64) The ratio of slope of slopes of P-V graphs of adiabatic and isothermal process is

[a] γ [b] $\frac{}{\gamma}$ [c] $1 + \gamma$ [d] $1 - \gamma$

(65) The image of an object placed 10cm in front of a concave mirror is erect. The radius of curvature of mirror is

[a] less than 10cm   [b] exactly 10 cm

[c] more than 10cm   [d] between 10cm and 20cm

(66) The aperture of objective lens of a telescope is made large so as to

[a] focus on distant object   [b] make image aberration less

[c] increase the resolving power of telescope   [d] increase the magnifying power of telescope

(67) Three capacitors of capacitance 3μF, 9μF and 18μF are connected once in series and another times in parallel, the ratio of equivalent capacitance in two cases (Cs/Cp) will be

[a] 1:15   [b] 15:1   [c] 1:1   [d] 1:3

(68) What is the value of end correction for closed organ pipe of radius 'r'?

[a] 1.2r   [b] 0.9r   [c] 0.6r   [d] 0.3r

(69) The permeability of diamagnetic material is

[a] greater than unity   [b] less than unity   [c] equal to unity   [d] zero

(70) The inductive reactance of an inductance of $\frac{1}{\pi}$ H at 50Hz is:

[a] $50 \pi \, \Omega$ [b] $\frac{50}{\pi} \Omega$ [c] $\frac{\pi}{50} \Omega$ [d] 100Ω

(71) A magnet is moved towards the coil. First quickly and ten slowly. The induced e.m.f. produced is

[a] larger in first case   [b] smaller in first case

[c] equal in both case   [d] based on resistance of coil

(72) Which of the following is conserved when light waves interfere?

[a] intensity   [b] energy   [c] amplitude   [d] momentum

(73) When a proton collides with an electron its wavelength

[a] will increase   [b] will decrease   [c] remains same   [d] becomes zero

(74) A radio active substance having N nuclei has activity R. The half life of substance is

[a] $0.693 \frac{R}{N}$ [b] $0.693 \frac{\lambda}{R}$ [c] $0.693 \frac{N}{R}$ [d] $\frac{N}{R}$

(75) In which region of electromagnetic spectrum, does the Lyman series of hydrogen atom lie

[a] ultra-violet   [b] infra-red   [c] visible   [d] x-ray

(76) A positron has same mass as

[a] proton   [b] α-particle   [c] neutron   [d] electron

(77) In Boolean algebra, y = A + B implies

[a] y equals A or B   [b] y equals sum of A and B

[c] y equals both A and B   [d] y equals neither A nor B

(78) Which of the following law is used in estimating the temperature of the sun.

[a] Joule's law of heating   [b] Planck's law

[c] Stefan's law   [d] Newton's law f cooling

(79) The specific charge for positive rays is much less than that for cathode rays. This in because

[a] positive rays are positively charged   [b] charge on positive rays are less

[c] mass of positive rays is much larger   [d] experimental method is wrong

(80) The de-Broglie wavelength of an electron moving with the speed of 6.6×10^5 ms⁻¹ is nearly equal to

[a] 10^{-11} m   [b] 10^{-9} m   [c] 10^{-7} m   [d] 10^{-5} m

(81)   The chromosomes are best seen in

[a] Telophase   [b] Anaphase   [c] Metaphase   [d] Prophase

(82)   Roots of angiospermic plants have vascular bundle

[a] Radial   [b] Collateral   [c] Bicollateral   [d] Non of these

(83)   Eutrophication is due to

[a] Air pollution   [b] Water pollution   [c] Land pollution   [d] Noise pollution

(84)   Which of the following is a connecting link between birds and reptiles

[a] Peripatus   [b] Limulus   [c] Neopilina   [d] Archaeopteryx

(85)   Lysosomes are reservoirs of

[a] RNA and protein   [b] Fats

[c] Secretory glycoproteins   [d] Hydrolytic enzymes

(86)   In bryophytes

[a] Sporophytes and gametophytes are independent

[b] Sporophytes complete their life cycle

[c] Sporophytes depend upon the gametophytes

[d] Sporophytes donot depend depend upon gametophytes

(87)   Which of the following is macronutrient

[a] Ca   [b] Mo   [c] Zn   [d] Mn

(88)   Which of the following is both exocrine and endocrine gland?

[a] Liver   [b] Pancreas   [c] Thyroid   [d] Adrenal

(89)   Lamarck's theory of evolution is called

[a] Survival of the fittest   [b] Theory of special creation

[c] Theory of spontaneous creation   [d] Inheritance of acquired characters

(90)   Which of the following is the largest gland in an adult man?

[a] Thymus   [b] Liver   [c] Thyroid   [d] Pancreas

(91)   Organisms which display properties of both living and nonliving

[a] Bacteria   [b] Lichens   [c] Viruses   [d] Diatoms

(92)   Haemoglobin is present in

[a] Plasma   [b] Leucocytes   [c] Erythrocytes   [d] Blood platelets

(93)   Survey is caused by deficiency of

[a] Vitamin B   [b] Iron   [c] Protein   [d] Vitamin C

(94)   Which of the following is an example of sex linked disease?

[a] AIDS   [b] Color-blindness   [c] Syphillis   [d] Gonorrhoea

(95)   Organelles present in plants but not in animals are

[a] Golgibodies   [b] Ribosomes   [c] Plastids   [d] Lysosomes

(96)   Evolutionary history of a group of organism is called

[a] Phylogeny   [b] Ontogeny   [c] Systematics   [d] Taxonomy

(97)   Edible part of mango is

[a] Epicarp   [b] Mesocarp   [c] Endocarp   [d] Epidermis

(98)   Bacteria cannot survive in a highly salted pickle because

[a] Salt inhibits reproduction in bacteria

[b] Nutrients in the pickle medium cannot support life

[c] Enough light is available for photosynthesis

[d] They become plasmolysed and death occurs

(99)   Reproduction in Paramecium is controlled by

[a] Flagella   [b] Cell wall   [c] Micronucleus   [d] Macronucleus

(100)   Nematocysts and involved in

[a] Digestion   [b] Stinging   [c] Locomotion   [d] Reproduction

~ Best of Luck ~

ENTRANCE TEST–2066 (2009)

LEVEL: Bachelor in Biomedical Engineering

TOTAL FULL MARKS: 100   **TIME: 02:00 hrs.**

Choose the precise answer to the following and tick (✓) on the attached **ANSWER SHEET**.

Reading carefully the 'DIRECTION', answer each and every question. ALL questions carry equal marks.

ENGLISH   **20×1=20 Marks**

DIRECTION: Select the appropriate choice.

(1) 'Etymology' is related with ....
   (a) study to words   (b) study of sentences
   (c) study of worms and insects   (d) study of phrases

(2) "Hyperdermics" is concerned with ....
   (a) surgery   (b) medicine   (c) soil-study   (d) Psychology

(3) The root word of psychology is .....
   (a) psycho   (b) psychic   (c) psyche   (d) psychiatrist

(4) The word 'gross' means ....
   (a) absolute   (b) total   (c) net   (d) complete

(5) As manuscript is for author, blueprint is for ......
   (a) engineer   (b) doctor   (c) optician   (d) architect

(6) Please furnish .... essential information.
   (a) to   (b) on   (c) with   (d) for

(7) He was appointed as ...... heir to his parental property.
   (a) a   (b) the   (c) an   (d) None

(8) Those .... God loves die soon.
   (a) who   (b) that   (c) whom   (d) what

(9) The army .... been deployed at the site.
   (a) has   (b) have   (c) had   (d) were

(10) The crops are dying; it .... rained.
   (a) must had not   (b) must not be   (c) must not have   (d) must not have been

(11) .... the reality they would not have signed the documents.
   (a) It they would have known   (b) Had they been known
   (c) If had they known   (d) If they had known

(12) He was quite sure that none of them ...... of the truth.
   (a) were aware   (b) had aware   (c) was aware   (d) were beware

(13) Bracelet: Wrist, has an order alike ....
(a) frame: picture   (b) bat-giove   (c) hat-head   (d) food:shoes

(14) The word 'Test' doesn't match with:
(a) evaluate   (b) assess   (c) examine   (d) certify

(15) A noble man has nobility, a villain has ....
(a) cruelty   (b) enemity   (c) villainy   (d) none of these

(16) The word 'inexplicable' means ....
(a) that can not be expressed
(b) that can not be explained
(c) that can not be experienced
(d) that can not be exemplified

(17) A bed of roses means:
(a) an idle place   (b) a high place   (c) a comfortable place   (d) an advantages place

(18) To titter means ....
(a) to cry   (b) to weep   (c) to laugh   (d) to glance

(19) As cow is a mammal, snake is a ......
(a) worm   (b) amplibian   (c) reptile   (d) animal

(20) As calf is for cow, fawn is for ....
(a) tiger   (b) horse   (c) cat   (d) deer

MATHEMATICS   20×1=20 Marks

DIRECTION: Tick the correct answer.

(21) If A, B, C be the sets then $\overline{A \cap B}$ is equal to:
(a) $A \cap B$ (b) $A \cup B$ (c) $\overline{A} \cup \overline{B}$ (d) None

(22) $\int Secx.dx$ is equals to:
a) secx – tanx   (b) log (secx + tanx)   (c) log (secx – tanx)   (d) secx + cot x

(23) If $\vec{a} = \vec{i} + 2\vec{j} + 3\vec{k}$ & $\vec{b} = 2\vec{i} + 3\vec{j} + 4\vec{k}$ be the two vectors then projection of a on b is :
(a) 20/29   (b) 20   (c) 29/20   (d) $20/\sqrt{29}$

(24) Which one is the correct value of $\lim_{x \to 4} \dfrac{x^2 - 16}{x - 4}$
(a) 4   (b) 16   (c) 8   (d) None

(25) The derivative of $\tan(\sin 2\theta)$ is equal to:
(a) $2\sec^2(\sin 2\theta)\cos 2\theta$ (b) $\csc(\sin 2\theta)$ (c) $\cot(\sin 2\theta)$ (d) None

(26) The product of two imaginary roots w and w² is:
(a) 0   (b) 1   (c) 2   (d) 3

(7) A square matrix having all the elements below the diagonal zero, is called
    (a) lower triangular matrix   (b) upper triangular matrix
    (c) symmetric matrix   (d) rectangular matrix

(28) The value of $\begin{vmatrix} \omega^2 & \omega & 1 \\ \omega & 1 & \omega^2 \\ 1 & \omega^2 & \omega \end{vmatrix}$ is equal to:

    (a) 1   (b) 2ω (c) 0   (d) None

(29) $(1-\cos 2A) / (1 + \cos 2A)$ is equals to:
    (a) $\cot^2 A$ (b) $2\tan^2 A$ (c) $\sin^2 A$ (d) $\tan^2 A$

(30) The value of $\left(\sin\frac{\pi}{3} + i\cos\frac{\pi}{3}\right)^3$ is:
    (a) 1   (b) -1   (c) i   (d) -i

(31) The total number of terms in $(1 + x)^n$, where n is a positive integer is:
    (a) n-1   (b) n   (c) n+2   (d) n+1

(32) The number of permutations of 4 persons seated around a table is:
    (a) 3   (b) 5   (c) 6   (d) 10

(33) The vector product of two parallel vectors is:
    (a) 2   (b) 4   (c) 6   (d) 0

(34) The general solution of $1 + \cos x = \sin x$ are:
    (a) $2n\pi, (2n+1)\pi$ (b) $(2n+1)\pi, (4n+1)\frac{\pi}{2}$ (c) $(2n\pi), (4n+1)\frac{\pi}{2}$ (d) None

(35) In tossing three coins at a time, the probability of getting at most one head is:
    (a) 3/8   (b) 7/8   (c) 1/2   (d) 1/8

(66) The equation of the circle with centre at (4, 5) and radius 3 is:
    (a) $x^2+y^2 -8x-10y+32 = 0$ (b) $x^2+y^2-9 = 0$
    (c) $4x+5y = 9$ (d) none of these

(37) The value of $\tan^{-1}x + \tan^{-1}y$ is equal to:
    (a) $\tan^{-1}\frac{x+y}{1-xy}$ (b) $\tan^{-1}\frac{x-y}{1+xy}$ (c) $\tan^{-1}\frac{1-xy}{x+y}$ (d) None

(38) A circle passes through (0,0), (a,0), (0,b), the coordinate of its center is:
    (a) (a,b)   (b) (b,a)   (c) (-a,-b)   (d) (a/2, b/2)

(39) The curve $3x^2 - 9x + 5y - 2 = 0$ represents:
    (a) a circle   (b) a parabola   (c) an ellipse   (d) a hyperbola

(40) The value of $\int\left(x+\frac{1}{x}\right)dx$ is equal to:
    (a) $x^2 + \log x + c$ (b) $x^2 + \log x$ (c) $x^2 - 1/x^2$ (d) none

DIRECTION: Tick the correct answer.

(41) The example of liquid as dispersed medium in colloidal system is:-
(a) Smoke   (b) Milk   (c) Fog   (d) Cheese

(42) Which of the following has lowest boiling point?
(a) H_2O (b) H_2S (c) H_2Se (d) H_2Te

(43) Which have smallest atomic and ionic radius?
(a) Na   (b) Na^+ (c) K   (d) K^+

(44) Dehydration of formic acid with conc. sulphuric acid gives:
(a) CO   (b) C   (c) Co and CO_2 (d) $C_2H_4O_4$

(45) Out of all the halogen hydracids, the weakest is:
(a) HI   (b) HBr   (c) HF   (d) HCL

(46) Which of the following noble gases has highest boiling point?
(a) He   (b) Ne   (c) Xe   (d) Ar

(47) Which of the following is called Carborundum?
(a) Sic   (b) CaC_2 (c) Be_1C (d) Al_4C_3

(48) The oxoacid of halogen having maximum acidic character is:
(a) $HClO_4$ (b) $HC1O_3$ (c) $HC1O_2$ (d) HClO

(49) Which of the following halogens has some metallic character?
(a) F   (b) Cl   (c) Br   (d) I

(50) The general electronic Configuration of elements group 16 is:
(a) $ns^2 np^6$ (b) $ns^2 np^3$ (c) $ns^2 np^4$ (d) $ns^2 np^2$

(51) Phosphorous is kept in:
(a) Cold water   (b) ammonia   (c) kerosene   (d) alcohol

(52) Among of the following the electron deficient compound is:
(a) Ccl_4 (b) $PC1_5$ (c) $Becl_2$ (d) Bcl_3

(53) Oxidation state of +1 for P is found in
(a) H_3PO_3 (b) H_3PO_4 (c) H_3PO_2 (d) $H_4P_2O_7$

(54) The electronic configuration of copper is:
(a) [Ar] $3d^3 45^2$ (b) [Ar] $3d^{10} 4S^1$ (c) [Ar] $3d^{11} 4S^1$ (d) [Ar] $3d^{10} 4S^{2+}$

(55) Percentage of gold in 18 carat gold is:
(a) 38.67%   (b) 75.0%   (c) 80.8%   (d) 20.0%

(56) Ethyl alcohol is to litmus:
(a) Acidic   (b) Basic   (c) Neutral   (d) None of these

(57) Nessler's reagent is used for the detection of

(a) Na^+ (b) K^+ (c) NH_4^- (d) Cu^{2+}

(58) In the metallurgy of iron, when lime stone is added to the blast furnace, the calcium ion end up in:

(a) Gangue   (b) Slag   (b) Metallic Calcium   (d) Calcium oxide

(59) Petrol for aviation purpose must contain:

(a) Straight chain hydrocarbon   (b) Aromatic hydrocarbon

(c) Olefinic hydrocarbon   (d) Highly branch chain paraffine

(60) The isomers of bromobutane with lowest boiling point is

(a) n- Butyl Bromide   (b) Isobutyl Bromide   (c) ter-Butyl bromide   (d) Sec. Butly bromide

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PHYSICS   **20×1=20 Marks**

DIRECTION: Select t1he appropriate choice.

---

(61) Plank's Constant has same dimensions as

(a) energy   (b) power   (c) angular momemtum   (d) linear momemtum

(62) The range of a projectile is maximum if the range R, what is the maximum height

(a) 2R   (b) R   (c) R/2   (d) R/4

(63) A electron move with uniform velocity V enters a region of magnetic field B. if V and B are parallel, the electron

(a) move in same direction   (b) move in perpendicular to B

(c) move in circular path   (d) will not move

(64) What is the smallest radius of a circle on which a scooterist can turn if his speed is 36km/hr and the coefficient of static fiction between the tyres and road is 0.32?

(a) 34m   (b) 31.8m   (c) 36m   (d) 18m

(65) The coefficient of restitution (e) for perfectly inelastic collision is:

(a) 1   (b) 0   (c) 0.5   (d) 1.5

(66) If the earth suddenly stops to rotate about its own axis, the value of g at equator is increased by about

(a) 0.35%   (b) 0.23%   (c) 0.53   (d) 0.9%

(67) With what speed the earth may rotate so that bodies lying at equator may fly off

(a) 17 times the present speeed   (b) 2 times the present speeed

(c) 19.1 times the present speeed   (d) 20.2 times the present speeed

(68) Two water droplet of radii in 1:2 ratio falls from rest very high from earth surface their momenta on rewaching the earth are in ratio

(a) 1:16   (b) 1:32   (c) 1:4   (d) 1:8

(69) The substance which expands on both heating and cooling is: –

(a) water at 0^oC (b) ice at 0° (c) water at 4^oC (d) semiconductor

(70) What is the power dissipated in inductor L when the current passes through it is:

(a) $1/2LI^2$ (b) LI^2 (c) Zero   (d) none of these

(71) If there were no atmosphere, the earth would have been:

(a) slightly hot   (b) slightly cold   (c) very hot   (d) very cold

(72) A gas perform the most work when it expands

(a) isothermally   (b) adiabatically   (c) isobarically   (d) at a no-uniform rate

(73) The critical angle of light passes from glass to water is maximum for:

(a) red   (b) violet   (c) blue   (d) yellow

(74) The eye is most sensitive to the light of wavelength:

(a) 555 A°   (b) 555m   (c) 555×10^{-9}m   (d) 555×10^{-8}m

(75) The fringe width β of the diffraction pattern and slit width 'd' are related as:

(a) β is directly proportional to d   (b) β is directly proportional to 1/d

(c) β is directly proportional to $d^{1/2}$ (d) β is independent of d

(76) The frequency of transverse vibration string is doubled if:

(a) tension is doubled   (b) length is doubled

(c) length is halved   (d) tension is halved

(77) A open pipe and a closed pipe resonate with a same tuning fork, the ratio of their length is

(a) 1:2   (b) 2:1   (c) 1:1   (d) 3:4

(78) The value of end correction for an open organ pipe of radius r is

(a) 0.3r   (b) 0.6r   (c) 0.9r   (d) 1.2r

(79) An observer moves towards a stationary source with velocity one-tenth velocity of sound the apparent increase in frequency is:

(a) 0.1%   (b) 5%   (c) 10%   (d) 11%

(80) If the earth is supposed to be a metallic sphere, its capacity will be nearly:

(a) 700F   (b) 700PF   (c) 700liF   (d) 6.4×10^6

BIOLOGY   20×1=20 Marks

DIRECTION: Select t1he appropriate choice.

(81) Contractile vacuoles in protozoans primarily serve for:

(a) osmoregulation   (b) excretion   (c) digestion   (d) respiration

(82) Malaria is caused by:

(a) Asearis   (b) Plasmodium   (c) Faul air   (d) Mosquitoes

(83) Earthworm respire by

(a) ctenidia   (b) clitellum   (c) moist skin   (d) prostomium

(84) Ribosomes are centres for:

(a) Protein synthesis   (b) photosynthesis   (c) fat synthesis   (d) respiration

(85) The alveoli of the lung is lined with

(a) cuboidal epithelium   (b) columnar epithelium

(c) squamos epithelium   (d) ciliated epithelicn

(86) Which one of the following is a water soluble vitamin?

(a) Vitamin A   (b) Vitamin B complex   (c) Vitamin D   (d) Vitamin E

(87) A slit like opening to larynx is called

(a) glottis   (b) gullet   (c) epiglottis   (d) trachea

(88) CO_2 is transported by haemoglobin as:

(a) Carboxyhaemoglobin   (b) Carbamino haemoglobin

(c) Carbonic acid   (d) Haemoglobin Bicarbonates

(89) Number of cranial nerves in man are:

(a) 31 pair   (b) 10 pair   (c) 13 pair   (d) 12 pair

(90) Which of the following helps us to distinguish colours?

(a) rods   (b) rhodopsin   (c) cones   (d) all of the above

(91) Which cells of pancreas produce insulin?

(a) B-cells   (b) α-cells   (c) Leydig cells   (d) interstitial cells

(92) Diabetes insipidus is due to failure of secretion of:

(a) insulin   (b) ADH   (c) Aldosterone   (d) Thyroid

(93) Fertilization of an ova takes place in the

(a) uterus   (b) fallopian tubes   (c) vagina   (d) ovary

(94) The final product of glucolysis is:

(a) glucose   (b) pruvic acid   (c) phosphoglyceric acid   (d) malic acid

(95) Endosperm tissue is normally:

(a) haploid   (b) triploid   (c) diploid   (d) tetraploid

(96) Beri-beri is caused by deficiency of

(a) Vit B1   (b) Vit B2   (c) Vit B6   (d) Vit B12

(97) Penicillin was discovered by:

(a) Alexandor Flemming   (b) Charles Darwin

(c) Louis Pasteur   (d) David Levy

(98) The brain size of modern man is:

(a) 400cc   (b) 520cc   (c) 1400cc   (d) 1800cc

(99) A fruit which develops from a condensed inflorescence is called:

(a) a simple fruit   (b) an etaerio of fruit   (c) an aggregate fruit   (d) a composite fruit

(100) The diploid number of chromosome is obtained by:

(a) plasmogamy   (b) syngamy   (c) dichogamy   (d) none of these

~ Best of Luck ~

A   ENTRANCE TEST - 2068 (2011)

LEVEL: Bachelor in Biomedical Engineering

TOTAL FULL MARKS: 100   TIME: 2:00 hrs.

Choose the correct answer and darken the circle on the attached ANSWER SHEET .
Answer all questions. ALL questions carry equal marks.

ENGLISH   20×1=20 Marks

DIRECTION: Choose the most appropriate answer..

(1)   Many a boy .... present.
      a.   was   b.   were   c.   have   d.   has

(2)   Give the order. Let the order ....
      a.   give   b.   be given   c.   to be given   d.   should be given

(3)   He said "What a beautiful scene!"
      a.   He said that what a scene it was.
      b.   He wondered that it was a beautiful scene.
      c.   He exclaimed what a beautiful scene it was.
      d.   He exclaimed that it was a very beautiful scene.

(4)   He thanked me for what I ....
      a.   have been doing   b.   have done   c.   did   d.   had done

(5)   Get up now. You .... since 2 o' clock.
      a   have been slept   b.   have been sleeping c.   are sleeping   d.   slept

(6)   If you .... ice, it turns to water.
      a.   heated   b.   heat   c.   had heated   d.   would have
           heated

(7)   The patient died ....cholera.
      a.   of   b.   with   c.   from   d.   by

(8)   I shuddered at the thought of the airplane trip. Here "shuddered" means
      a.   wept   b.   grew excited   c.   trembled   d.   grew anxious

(9)   Each of the radioisotopes produced artificially .... its own distinct structure.
      a.   have   b.   has   c.   having   d.   have had

(10) Tom might be at home now,..............?

a. mightn't he   b. mustn't he   c. will he   d. may he

(11) I am looking forward …..you.

a. to see   b. to seeing   c. to have seen   d. seeing

(12) He asked me what I ……..do for a living.

a. may   b. should   c. could   d. would

(13) …………you pass me the salt?

a. ought   b. could   c. have   d. do

(14) Binod offered ………..because he had faith in his capabilities.

a. to him the position   b. him the position

c. the position for him   d. him to the position

(15) Rita made her friend …………….

a. laughing   b. to laugh   c. laugh   d. laughed

(16) Let me get the document ……………

a. printed   b. to print   c. print   d. prints

(17) My brother has never studied English, ………….he can understand almost everything when someone speaks to him.

a. for example   b. therefore   c. nevertheless   d. and

(18) Synonym of "recede" is

a. advance   b. restrict   c. resume   d. retire

(19) Rights ………..automatically to him who duly performs his duties.

a. belong   b. transfer   c. issue   d. accure

(20) Flemingos were about to have died out until laws were passed to protect them. Here "have died out"

Become confined   b. become infected   c. become extinct   d. become deformed

---

MATHEMATICS   20×1=20 Marks

DIRECTION: Tick the correct answer.

(21) Derivative of $\sin^3 x$ w.r.t. $\cos^3 x$ is

a. $\tan^3 x$ b. $-\tan x$ c. $\tan x$ d. $\cot x$

(22) If A and B are any two sets then A-(B-A) is equal to

a. A-B   b. ϕ c. A   d. none of these

(23) A.M., G.M., and H.M. between any two unequal positive numbers satisfy the relation

a. H.M >G.M. >A.M.   b. A.M.> G.M.> H.M.

c. A.M.= G.M. =H.M.   d. none of these

(24) If $x \in R$, the number of solution of $\sqrt{2x+1} - \sqrt{2x-1} = 1$ is

a. 2   b. 1   c. 4   d. infinity

(25) The value of $\sin \cot^{-1} x$ is

     a. $\sqrt{1-x^2}$ b. x c. $(1+x^3)^{-3/2}$ d. $\dfrac{1}{\sqrt{1+x^2}}$

(26) The area of a $\triangle ABC$ is equal to

     a. $\dfrac{abc}{4r}$ b. $\dfrac{abc}{4R}$ c. $\dfrac{4R}{abc}$ d. none

(27) The projection $\vec{a}$ in the direction of $\vec{b}$ is equal to

     a. $\dfrac{\vec{a} \times \vec{b}}{|\vec{a}|}$ b. $\dfrac{\vec{a}.\vec{b}}{|\vec{b}|}$ c. $\dfrac{|\vec{a},\vec{b}|}{|\vec{b}|}$ d. $\dfrac{\vec{b}.\vec{a}}{|\vec{a}|}$

(28) The value of $\sqrt{-1-\sqrt{-1-\sqrt{-1}}}\ \ldots\ldots$ is

     a. 1 or ω b. ω or ω^2 c. 1 or ω^2 d. none of these

(29) The equation of the line through (1,2) & perpendicular to $x+y+1=0$ is

     a. y-x+1=0   b. y-x-1=0   c. y-x+2=0   d. y-x-2=0

(30) The period of the function $f(x) = \sin^2 x + \tan x$ is

     a. π b. 2π c. 3π d. none of these

(31) Let $f : R \to R$ be defined by $f(x) = 3x - 4$, then $f^{-1}(x)$ is defined by

     a. $f(x) = \dfrac{1}{3}(x+4)$ b. $f(x) = \dfrac{1}{3}(x-4)$ c. $3x+4$ d. $\left(\dfrac{x-4}{3}\right)$

(32) The equation $|\vec{r}| = 5$ represents

     a. a circle   b. a straight line   c. sphere   d. plane

(33) If $\vec{a}$ and $\vec{b}$ are unit vectors and θ is the angle between them, then $|\vec{a}.\vec{b}|$ is equal to

     a. $2\sin\theta$ b. $\cos\theta$ c. $2\cos\left(\dfrac{\theta}{2}\right)$ d. $2\sin\left(\dfrac{\theta}{2}\right)$

(34) $\displaystyle\int_{-\pi/2}^{\pi/2} \sin|x|\,dx$ is equal to

     a. 0   b. 1   c. 2   d. $\dfrac{1}{2}$

(35) The nth term of the series $\dfrac{1}{2}, \dfrac{2}{3}, \dfrac{3}{4}, \ldots$ is

     a. $\dfrac{n}{2n-1}$ b. $\dfrac{n}{n+1}$ c. $\dfrac{n+1}{n}$ d. $\dfrac{n-1}{n}$

(36) If $\sin A = \sin B$ and $\cos A = \cos B$, $A > B$, then

    a. $\sin(1/2)(A-B)=0$ b. $\sin(1/2)(A+B)=0$

    c. $\cos(1/2)(A-B)=0$ d. $\cos(1/2)(A+B)=0$

(37) The length of latus rectum of the parabola $y^2 = x$ is

    a. 1   b. 2   c. 4   d. $\frac{1}{4}$

(38) The angle which the diagonals of cube make is

    a. $\cos^{-1}\left(\frac{2}{3}\right)$ b. $\cos^{-1}\left(\frac{1}{3}\right)$ c. $\sin^{-1}\left(\frac{2}{3}\right)$ d. $\sin^{-1}\left(\frac{1}{3}\right)$

(39) If l, m, n denotes the direction cosine of a line in space then

    a. $l^2+m^2+n^2=0$ b. $l+m+n=0$ c. $l^2+m^2+n^2=1$ d. $l+m+n=1$

(40) If $\dfrac{3x}{(x-6)(x+a)} = \dfrac{2}{x-6} + \dfrac{1}{x+a}$, then $a=$

    a. 1   b. 2   c. 3   d. 4

CHEMISTRY   **20×1=20 Marks**

DIRECTION: Tick the correct answer.

(41) Proton is a

    a. Neutral particle   b. Fundamental particle

    c. α-particle   d. Nucleus of heavy hydrogen

(42) Azimuthal quantum number gives

    a. Shape of sub-shells   b. Energy of electron

    c. Average size of an atom   d. None of the above

(43) The angle between two covalent bonds is maximum in

    a. CH_4 b. H_2O c. CO_2 d. NH_3

(44) When 4.0 gm of NaOH is dissolved in 1 Lit of solution, pH will be

    a. 6   b. 13   c. 1   d. 10

(45) CH_3COOH has

    a. Only one displaceable H-atom   b. 4- displaceable H-atom

    c. 3- displaceable H-atom   d. None of these

(46) Sulphur is placed in...........group of periodic table

    a. VIA   b. VIIA   c. IIIB   d. IIA

(47) The laughing gas is

    a. N_2O b. NO_2 c. NO d. N_2O_5

(48) Aqua regia is a mixture of

    a. $3HCL+1HNO_3$ b. $1HCL+3HNO_3$

    c. $3HNO_3+1H_2SO_4$ d. $3H_2SO_4+1HNO_3$

(49) Chlorine is mixed with water to

    a. kill bacteria   b. remove dirt

    c. precipitate impurities   d. remove suspension

(50) Baking soda is

    a. $Na_2CO_3.10H_2O$ b. $Na_2CO_3.H_2O$ c. Na_2CO_3 d. $NaHCO_3$

(51) Rust is

    a. $FeO + Fe(OH)_2$ b. $Fe_2O_3 + Fe(OH)_2$ c. $Fe_2O_3 + Fe(OH)_3$ d. Fe_2O_3

(52) Which of the following is green vitriol?

    a. $FeSO_4.7H_2O$ b. $ZnSO_4.7H_2O$ c. $CuSO_4.7H_2O$ d. $MgSO_4.7H_2O$

(53) The triple bond in ethyne is made up of

    a. Three π bonds   b. Three σ bonds   c. One σ bond and two π bonds   d. Two σ bonds and one π bond

(54) Two immiscible liquids can be separated by

    a. Distillation   b. Vacuum Distillation

    c. Separating funnel   d. Distillation under reduced pressure

(55) Grignard reagent is obtained when magnesium reacts with

    a. ethylene   b. ethane   c. ethyl iodide   d. ethyne

(56) Gammexene is

    a. Hexachloroethene   b. DDT   c. TNT   d. Benzenehexachloride

(57) The IUPAC name of $CH_3-CH=CH-C≡CH$ is

    a. 4-pentyne-2-ene   b. 3-pentene-1-yne   c. pent-2-en-1-yne   d. 3-pentene-4-yne

(58) Calculate the weight of caustic soda required to convert 100 ml of N/10 HCl to N/100.

    a. 0.4 gm   b. 0.04 gm   c. 0.36 gm   d. 4 gm

(59) The oxidation number of sulphur in H_2SO_4 is

    a. +3   b. +5   c. +6   d. +8

(60) The pH of 0.01 M solution of HCl is

    a. 1   b. 2   c. 3   d. 4

PHYSICS

20×1=20 Marks

(61) Which of the following is a scalar quantity?

    a. Force   b. Momentum   c. Acceleration   d. Work

(62) Which of the following is unit of energy?

    a. Columb-Volt   b. Volt-Meter   c. Volt/Columb   d. Columb/Volt

(63) If the earth suddenly stops rotating, the weight of body at earth surface will

    a. become zero   b. increase   c. decrease   d. remain unaffected

(64) Which of the followings have same dimensions?

    a. Length and Strain   b. Stress and Force

    c. Stress and Young's modulus of elasticity   d. Strain and Pressure

(65) If R be the maximum horizontal range for a projectile, the corresponding greatest height is equal to

    a. R/4   b. R/2   c. 2R   d. 4R

(66) "Heat can't flow from a cold to a hot body without the aid of any external energy". This was enunciated by

    a. Kelvin & Plank   b. Caulsius   c. Joule & Johnshon   d. Einstein

(67) At 4° C, water has minimum

    a. density   b. volume   c. conductivity   d. energy

(68) Which of the following equation represent isothermal process?

    a. $\dfrac{P}{T}$ = constant   b. PV = constant   c. PT = constant   d. $\dfrac{V}{T}$ = constant

(69) When a ray of light enters a glass slab from air

    a. its wavelength decreases   b. its wavelength increases

    c. its frequency increases   d. neither frequency nor wavelength changes

(70) The colour of light is not characteristic of

    a. amplitude   b. wavelength   c. velocity   d. frequency

(71) A well cut diamond appears bright because

    a. it emits light   b. it is radioactive

    c. of total internal reflection   d. it has high density

(72) Sound waves in organ pipes are

    a. progressive transverse waves   b. progressive longitudinal waves

    c. stationary transverse waves   d. stationary longitudinal waves

(73) With sound waves one cannot observe the phenomenon of

    a. refraction   b. interference   c. diffraction   d. polarization

(74) A car is approaching towards an observer with a speed of 54 km/hour. Its horn produces a sound of frequency 2000 Hz. The frequency of sound heard by the observer is

a. 2128 Hz   b. 2092 Hz   c. 2300 Hz   d. 2400 Hz

(75) The capacitance of a parallel plate capacitor having electric substance between them can be increased by

a. increasing the area of the plates   b. increasing the distance between the plates

c. decreasing the area of the plates   d. removing the dielectric

(76) The resistance of 40 Watt, 220 Volt lamp is

a. 50 ohm   b. 1210 ohm   c. 10000 ohm   d. 60 ohm

(77) After losing an electron, an atom of helium becomes

a. positive helium ion   b. an alpha particle

c. negative helium ion   d. an atom of hydrogen

(78) "No two electrons in an atom will have all the four quantum numbers equal". This statement is known as

a. Exclusion principle   b. Uncertainty principle

c. Hund's rule   d. Aufbau's rule

(79) In Balmer series of hydrogen spectrum, the transition of electron takes place from higher energy levels to lower energy level n, where n is

a. 1   b. 2   c. 3   d. 4

(80) If λ is the radioactive constant of a radioactive atom. Its half-life is equal to

a. $\ln(1/\lambda)$ b. $\ln(2/\lambda)$ c. $2/\lambda$ d. $\lambda/2$

| BIOLOGY | 20×1=20 Marks |

DIRECTION: Select the appropriate choice.

(81) Which of the following is a eukaryotic cell?

a. Bacteria   b. Virus   c. Fungi   d. Cyanobacteria

(82) Replication of DNA occurs in .... of the cell division.

a. Prophase   b. Interphase   c. Metaphase   d. Telophase

(83) Granulocytes are

a. Monocytes, neutrophils, lymphocytes   b. Neutrophils, eosinophils, lymphocytes

c. Lymphocytes, basophils, eosinophils   d. None of the above

(84) Which of the following is the site of protein synthesis?

a. Nucleus   b. Ribosome   c. Golgi bodies   d. Lysosomes

(85) .... is defined as the sudden, random and hereditable changes in the organisms.

a. Conjugation   b. Mutation   c. Transduction   d. Replication

(86) Which of the following is the power house of the cell?

a. Mitochondria   b. Lysosome

c. Ribosome   d. Endoplasmic reticulum

(87) BCG vaccine is used against

a. Typhoid   b. Tuberculosis   c. Tetanus   d. Trypanosoma

(88) Glycogen is

a. Monosaccharid   b. Disaccharide   c. Polysaccharide   d. Oligosaccharide

(89) What is present in chromosomes?

a. RNA   b. DNA   c. ATP   d. ADP

(90) Mushroom is ....

a. Autotrophic in nature   b. Heterotrophic in nature

c. Parasitic in nature   d. None of the above

(91) Heart of amphibian is

a. One chambered   b. Two chambered   c. Three chambered   d. Four chambered

(92) Respiration which takes place in tissue cells is known as ....

a. External respiration b. Internal respiration c. Expiration   d. Inspiration

(93) Cellulose is found in ....

a. Cell wall   b. Cell membrane   c. Plasma membrane   d. None

(94) How many molecules of oxygen does a hemoglobin molecule can carry?

a. 8   b. 6   c. 4   d. 2

(95) The conversion of nitrogen to nitrates and ammonia in nitrogen cycle is called

a. Nitrogen fixation   b. Nitrification   c. Ammonication   d. Denitrification

(96) Dengue fever is caused by

a. Bacteria   b. Fungi   c. Virus   d. Protozoa

(97) The organ responsible for the filtration of blood is

a. Liver   b. Heart   c. Kidney   d. Stomach

(98) Which of the following plants shows an alternation of generation?

a. Mucor plant	b. Fern	c. Spinach	d. Mustard

(99) Insulin is produced by……

a. Salivary gland	b. Thyroid gland	c. Islets of langerhans	d. Liver

(100) Locomotory organ of amoeba is

a. Cilia	b. Flagella	c. Pseudopodia	d. Setae

PURBANCHAL UNIVERSITY
Faculty of Science and Technology
BIRATNAGAR, NEPAL

ENTRANCE TEST-2070 (2013)

BE (BIOMEDICAL)

FULL MARKS:100

TIME: 2:00 Hrs.

- Choose the correct or most appropriate answer and **DARKEN THE CIRCLE** on the attached **ANSWER SHEET.**
- Answer all questions. All questions carry equal marks.
- This question set contains 8 pages.

ENGLISH

20×1=20 Marks

1. My father died....................fever.

   a. with   b. from   c. of   d. for

2. 'Kishor has eaten oranges'. The passive is

   a. Oranges are eaten by Kishor.   b. Oranges were eaten by Kishor.

   c. Oranges are being eaten by Kishor.   d. Oranges has been eaten by Kishor.

3. Peter takes after his father. Here, 'takes after' means

   a. illegible   b. represent   c. contemporary   d. resemble

4. The masculine of Negress is

   a. Negro   b. Ewe   c. Spinister   d. Mare

5. She is ....to music.

   a. adequate   b. conducted   c. devoted   d. addicted

6. "The doctor will see the patient". The passive is

   a. The doctor is seeing the patient   b. The doctor has seen the patient

   c. The patient will be seen by the doctor   d. The patient is being seen by the doctor

7. When a bottle breaks, it

   a. tears   b. crumbles   c. snaps   d. shatters

8. The antonym of 'quiet' is

   a. noisy   b. dark   c. natural   d. pessimist

9. A horse ....

   a. brays   b. barks   c. neighs   d. hisses

10. The plural of syllabus is

a. syllabues   b. syllabi   c. syllabies   d. syllaba

11. I shall print the book. 'Print' here is used as

a. verb   b. noun   c. adjective   d. adverb

12. He lives in western Nepal.

a. Where did he live?   b. Where does he lives?

c. Where he lives?   d. Where does he live?

13. The synonym of 'couple' is

a. pair   b. peril   c. terror   d. jealous

14. The girl......................a blue eye is lame.

a. with   b. of   c. by   d. in

15. The food that was served in the dinner was not at all..................

a. feasible   b. afflicted   c. material   d. palatable

16. Jill has a wonderful house. 'Wonderful' in this sentence is used as ....

a. verb   b. adjective   c. noun   d. adverb

17. He is not handsome............................

a. Is he?   b. Isn't he?   c. Was he?   d. Wasn't he?

18. The patient may die.............................any moment.

a. on   b. in   c. at   d. to

19. The feminine of 'Ram' is

a. Ewe   b. Witch   c. Hen   d. Doe

20. 'Don't cry' is

a. negative sentence   b. imperative sentence

c. interrogative sentence   d. optative sentence

PHYSICS

20x1=20 Marks

21. "Heat cannot be wholly converted into work", this law was enunciated by

a. Kelvin & Planck   b. Clasius   c. Einsten   d. Joule and Thomson

22. Which of the following is a vector?

a. time   b. work   c. heat   d. momentum

23. Which of the following is equal to impulse?

a. linear momentum   b. change in linear momentum   c. work   d. torque

2

24. The mass of a particle at the centre of Earth is

a. zero   b. infinite   c. slightly more than at poles   d. same as at other places

25. The angular speed of a second-hand of a watch in radian/sec is

a. $\pi/6$ b. $\pi/30$ c. $\pi/60$ d. $\pi/180$

26. If a gymnast, sitting on a rotating stool with his arms outstretched suddenly lowers his arms,

a. the angular velocity decreases   b. the moment of inertia decreases

c. the angular velocity remains constant   d. the angular momentum increases

27. The SI unit of Poisson's ratio is

a. Jm^{-1} b. Nm^{-2} c. Nm^2 d. unitless

28. What makes water drop spherical?

a. cohesion   b. adhesion   c. gravity   d. atmospheric pressure

29. The scale of temperature having no negative temperature is

a. Kelvin scale   b. Celsius scale   c. Fahrenheit scale   d. Raumer scale

30. A copper disc has a hole. If the disc is heated, the size of hole

a. increases   b. decreases

c. remain unchanged   d. first decreases and then increases

31. The triple point of a substance

a. is unique   b. has two values   c. have three values   d. doesn't exist

32. The focal length of a concave mirror is

a. maximum for red colour   b. maximum for violet colour

c. maximum for yellow colour   d. same for all colours

33. Large aperture of telescope are used for

a. greater magnification   b. greater resolution

c. reducing lens aberration   d. ease of manufacture

34. Interference of light resolved the

a. wave nature of light   b. quantum nature of light

c. transverse wave nature   d. longitudinal wave nature

35. The polarization phenomenon can take place

    a. in all waves   b. in transverse waves

    c. in transverse wave only   d. in standing wave only

36. On charging a body positively, its mass

    a. gets increased   b. gets decreased

    c. may increase or decrease   d. remain unchanged

37. The note of lowest frequency is called the

    a. fundamental note   b. first overtone   c. beats   d. octave

38. The quantity in electricity analogous to temperature is

    a. resistance   b. potential   c. charge   d. inductance

39. Three bulbs of 25, 40 and 60 watts are given. Which of these has lowest resistance?

    a. 25W bulb   b. 40W Bulb   c. 60W bulb   d. Information is insufficient

40. A current carrying wire produces

    a. only electric field   b. only magnetic field   c. both electric & magnetic field   d. no field

<div align="center">CHEMISTRY</div>

20 ×1 = 20 Marks

41. Silver is extracted from its

    a. Sulphide   b. Oxide   c. Nitrate   d. Chloride

42. A compound which does not give positive test for nitrogen is

    a. Urea   b. Azobenzene   c. Glycine   d. Phenylhydrazine

43. Different proportions of oxygen in the various oxides of nitrogen prove the law of

    a. Equivalent proportions   b. Multiple proportions

    c. Constant proportions   d. Conservation of matter

44. Which of the following has maximum number of molecules?

    a. 7 gm of N_2 b. 16 gm of O_2 c. 2 gm of H_2 d. 16 gm of NO_2

45. Chloroform on warming with Ag-powder gives

    a. C_6H_5 b. C_2H_4 c. C_2H_2 d. None

46. Hydrogen bond is maximum in

    a. Ethanol   b. Diethyl ether   c. Ethyl chloride   d. Triethyl amine

47. The oxidation number of Ni in $Ni(CO)_4$ is

    a. -4   b. +4   c. 0   d. +2

48. Which of the following is a poor conductor of electricity?

    a. CH_3COONa b. C_2H_5OH c. NaCl   d. KOH

49. The reaction is spontaneous, if the cell potential is

    a. +ve   b. –ve   c. 0   d. Infinity

50. The unit of second order reaction rate constant is

    a. $Litre^{-1} mol\, sec^{-1}$ b. $Litre^2 mol^{-2} sec^{-1}$ c. $Litre\, mol^{-1} sec^{-1}$ d. sec^{-1}

51. Which indicator is suitable for the titration between NH_4OH and HCl?

    a. Methyl orange   b. Phenolphthalein   c. Both a&b   d. None

52. pH of 0.05 M $Ba(OH)_2$ is

    a. 13   b. 10   c. 1   d. 14

53. Which has lowest first ionization potential?

    a. N   b. O   c. F   d. Ne

54. The main function of roasting is

    a. To remove volatile matter   b. Oxidation   c. Reduction   d. To make slag

55. When CO is passed over solid NaOH heated to 200^0C, it forms

    a. Na_2CO_3 b. $NaH CO_3$ c. HCOONa   d. None of these

56. Gypsum, $CaSO_4.2H_2O$ on heating to about 120^0C forms plaster of paris which has chemical composition represented by

    a. $2CaSO_4.3H_2O$ b. $CaSO_4. H_2O$ c. $2CaSO_4.H_2O$ d. $CaSO_4$

57. Percentage of Pb in lead pencil is

    a. 50%   b. 20%   c. 10%   d. Nil

58. The number of hydroxyl group in pyrophosphoric acid is

    a. 3   b. 4   c. 5   d. 7

59. By passing H_2S gas in acidified $KMNO_4$ solution, we get

    a. K_2S b. S   c. K_2SO_3 d. MNO_2

60. Freons are

    a. $CFCl_3$ b. $CCFl_2$ c. $CClF_3$ d. All

5
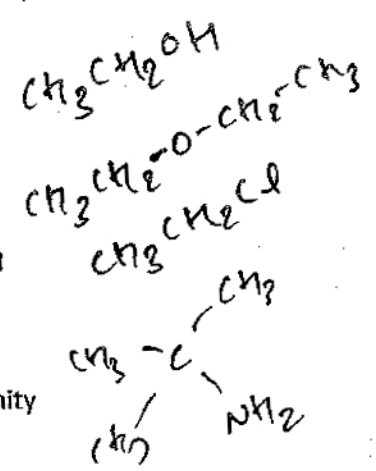
61. The lines represented by $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ are parallel, if

    a. h=2ab   b. h^2 =ab   c. a+b=0   d.a=b

62. Symmetric difference of set A and B is

    a. (A-B)+(B-A)   b. (A∪B)-(A∩B)   c. (A-B)-(B-A)   d. none

63. The sum of first n even natural numbers is equal to

    a. n(n+1)/2   b. n(n+1)   c.n^2 d. none

64. How many four different digit numbers can be formed by using the digits 1,2,3,4,5 ?

    a. 24   b. 96   c. 120   d.720

65. In any triangle ABC, if a =4 , b =3, C = 30^0, then area of triangle ABC is equal to

    a. 1 sq. unit   b. 2 sq. units   c. 3 sq. units   d. 4 sq. units

66. If sin x = 1, then its general solution is equal to

    a. x=π   b. x=2nπ +π   c. nπ ±π /2   d. x=nπ+$(-1)^n$ π/2

67. If $\mathbf{a}$ = (1, -1, 1), $\mathbf{b}$ = (2, -1, 1), then $\mathbf{a} \times \mathbf{b}$ is equal to

    a. (0,1,1)   b. (1,-2,3)   c.(1,1,1)   d. none

68. The derivative of a^x with respect to x is equal to

    a. a^x b. a^x log a   c.log a   d. none

69. The value of $\lim_{x \to 0}$ (tan x/ x) is equal to

    a. 0   b. 1   c. ∞   d. none

70. ∫ tan x dx equals

    a. cot x   b. sec x. tan x   c. log sec x   d. log cos x

71. The function f : N → N defined by f(x) = x + 1 is

    a. one to one   b. onto   c. both a & b   d. none

72. In a conic section if e = 1, the curve is

    a. ellipse   b. circle   c. hyperbola   d. parabola

73. Intercepts made on the coordinate axes by the plane 2 x - y +2 z = 4 are

    a. 2,2,-4   b. 2,2,4   c. 2,2,2   d. 2,-4,2

74. If f(x) = x^2 -2 x + 4, then

    a. f(x) has minimum at x=1   b. f(x) has maximum at x=1

    c. f(x) has neither maximum nor minimum   d. none