

ঢাকা বিশ্ববিদ্যালয়

'ক'-ইউনিট

Set Code : 2

cŭg el ʒvZK (mʒʃb) tkYxi fWZ©cixŋv 2009N2010

mgq t 1 NÈv 45 wgvbU

cYŋvb t 120

cixŋv_xŋ i cŭZ wbt`Rvej

1) OMR DÈi cŭT

(K) Dcwi fŕM wbtRi bvg, wczvi bvg l gvZvi bvg fWZ©cixŋvi Avte`bcŭT th fvlvq Ges thfvte tj Lv AvtQ tmfvteB wj LtZ nte| cŭkctŭT thfvte `ŋi AvtQ, DÈi cŭT i wv` ʃ RvqMvq wK tmfvteB `ŋi KiZ nte|

(L) cixŋv_xŋK Roll No., Serial No. l Set Code wj tL msuké-eÈ cŭY KiZ nte|

2) cŭkctŭT cŭZK cŭkè Pviw DÈi t` l qv AvtQ| mwK DÈiw tetQ wbtq OMR DÈi cŭT i wv` ʃ wcltqi QtKi msuké-Ni Kvŕj v Kwj i ej tcb w` t q mʒvYŋc fivw KiZ nte| mwK DÈi bv `Ktj metPtq Dchʒ DÈiw tetQ wbtZ nte|

3) cŭZ fj DÈi i Rb` 0.25 bʒf KvUv hvte Ges Zv wcl qv wÈK mgšq Kiv nte|

4) GKB cŭkè GKwK DÈi MŏYthwM` nte bv|

5) cŭkctŭT i duKv RvqMvq cŭqRbtevta Calculation Kiv hvte| Avj v` v tKvb KwMR e`envi Kiv hvte bv|

6) **Calculator** e`envi Kiv hvte| Zte **Programming** Kiv hvq Ggb **Calculator** e`envi Kiv hvte bv|

7) cixŋv tkl bv nl qv chŊ-cixŋv Kŋ Z`wM Kiv hvte bv|

8) cixŋv mgwŕi mstKZ tkvbi mt½ mt½ cixŋv_xŋj Lv eU Ki te Ges DÈi cŭT w cŭZ teŋK MŏY bv Kiv chŊ-wR Amb Z`wM Ki te bv|

9) cŭkctŭT tdiZ t` l qvi cŭqvRb tbB|

cixŋv_xŋ i wtkl fvte j ŋ i vLZ nte

(K) mvavi Yfvte cixŋv_xŋ i Physics, Chemistry, Mathematics Ges Biology GB Pvi wcl tqB DÈi w` tZ nte| hw` tKvb cixŋv_xŋPviw i gta` tKvb GKw ev `ŋw wcl q D`P-gva`wK ev mggvŕbi chŋq Aa`qb bv Kŕi `vtK, Zvntj Zvi cwietZ© Bangla A_ev/Ges English wcl tq cixŋv w` t q Pviw wcl q cŭY Ki te|

(L) Physics, Chemistry, Mathematics Ges Biology D`P-gva`wK chŋq Aa`qb Kiv mtÈj tKD B`Ov Ki t j i agvŕ PZL© wcl tqi cwietZ© Bangla A_ev English wcl tq DÈi w` tZ cvi te|

(M) Pviw i AwaK wcl tq DÈi Ki t j DÈi cŭT gj`vq Kiv nte bv|

(N) cixŋv th tKvb i Kg Am`çvq Ae j ʒb Ki t j ev Ae j ʒbi tPón Ki t j cixŋv_xŋK emn`vi Kiv nte Ges Zvi cixŋv emvZj etj MY` nte|

(O) cixŋv Kŕŋ tgvvBj tdvb e`envi mʒvYŋwŕl × Ges tKD e`envi Ki t j Zv cixŋv Am`çvq Ae j ʒb wntmte MY` Kiv nte|

পদার্থবিজ্ঞান (Physics)

- ১। 220 V rms তড়িৎপ্রবাহের সীমা 7.07 Amp peak। প্রতিদিন 10 ঘণ্টা (k) ব্যবহার করে একটি 1000 W (k) বিদ্যুৎ উৎপাদনকারী (An electric heater taking 7.07 Amp peak current from an ac voltage source of 220 V rms is operated 10 hours per day. If the price of 1 unit of electricity is Tk. 4.00, the cost per day for operating the heater is—)
- (a) Tk. 88.00 (b) Tk. 68.00
(c) Tk. 44.00 (d) Tk. 22.00
- ২। নিচের কোনটি টর্কের সঠিক একক? (Which one of the following is the correct unit of torque?)
- (a) Dyne/cm (b) Nm
(c) N/m (d) N/m.s
- ৩। 20 kg ভর বিশিষ্ট একটি তারের এক প্রান্ত থেকে 2 mm দূরত্ব পর্যন্ত তারের দৈর্ঘ্য 5 m এবং ক্রস-সেকশনাল এলা 1 mm²। তারের দৈর্ঘ্য 2 mm বৃদ্ধি পেলে তারের যৌগক সূচক কত হবে? (20 kg mass is suspended from one end of a wire of length 5 m and of cross-sectional area 1 mm². If the increase in length of the wire is 2 mm what is the Young's modulus of the wire?)
- (a) 5×10^{11} dyne/cm² (b) 20×10^{12} dyne/cm²
(c) 4.9×10^{12} dyne/cm² (d) 5.6×10^{12} dyne/cm²
- ৪। একটি ট্রান্সফর্মারের প্রাথমিক কয়েল 20:1 ভোল্টের অনুপাতের সাথে 20Ω রোধের একটি প্রাথমিক কয়েল সংযোগ করা হয়েছে। 220 V তড়িৎ প্রবাহ প্রয়োগ করা হলে প্রাথমিক কয়েলের প্রবাহ কত হবে? (The ratio of the turnings of the primary to secondary of a transformer is 20:1 and a resistance of 20Ω is connected to the secondary. If a voltage of 220 volt is applied to the primary, the current through the primary is—)
- (a) 0.55 A (b) 27.5 mA
(c) 27.5 A (d) 5.5 mA
- ৫। কোনো স্থানে পানি উত্তপ্ত করার জন্য পানির তাপমাত্রা 100°C থেকে 120°C করা হলে পানির তাপমাত্রা কত হবে? (If some one wants to boil water at the top of a mountain, the person needs to heat the pot of water to a temperature—)
- (a) higher than 100°C
(b) lower than 100°C
(c) to 100°C
(d) cannot be determined
- ৬। একটি গাড়ি 10 m/s এবং একটি ট্রেন 20 m/s বেগে একে অপরকে সন্নিবেশিত করে আসছে। ট্রেনের সiren 480 Hz ফ্রিকোয়েন্সিতে বাজছে। বায়ুতে শব্দের বেগ 340 m/s। ট্রেনের সiren শ্রবণ করা যাবে কত ফ্রিকোয়েন্সিতে? (A cyclist and a train are approaching each other with velocities of 10 m/s and 20 m/s respectively. The train driver sounds a warning siren at a frequency of 480 Hz. Calculate the frequency of the siren heard by the cyclist. Speed of sound in air is 340 m/s.)
- (a) 525 Hz (b) 480 Hz
(c) 960 Hz (d) 240 Hz
- ৭। একটি রেডিওইসোটোপের অর্ধ-জীবন 6.5 ঘণ্টা। প্রাথমিকভাবে 4.8×10^{20} টি অণু ছিল। 26 ঘণ্টা পরে কত অণু অবশিষ্ট থাকবে? (The half-life of a particular radioactive isotope is 6.5 h. If there are initially 4.8×10^{20} atoms of the isotope, how many atoms of the isotope remain after 26 h?)
- (a) 6.0×10^{19} (b) 1.2×10^{20}
(c) 2.4×10^{20} (d) 3×10^{19}
- ৮। একটি তরঙ্গের দুই বিন্দুর মধ্যে পথের পার্থক্য $\lambda/4$ । এই দুই বিন্দুর মধ্যে পর্যায় পার্থক্য কত হবে? (The path difference between two points of a wave is $\lambda/4$. Then phase difference between these points will be)
- (a) $\lambda/8$ (b) λ
(c) $\pi/2$ (d) $\pi/3$

9| GKWU bj t₁ t₂ 2 m/s tetM cwb tei ntq GKWU t₁ qvj t₂ j p₁ f₁ te AvNvZ Ki t₁ Q| b₁ t₁ i c₁ t₁ Q⁰ n₁ t₁ Q 0.03m²| aiv hvK cwb t₁ qvj t₁ K wi evD₁ U Ki t₁ Q bv| t₁ qvt₁ j Dci cwb wK cwigvY ej c₁ QvM Ki t₁ Q ? (c₁ wbi NbZ₁ 1000 kg/m³) (Water emerges at 2m/s from a pipe and hits a wall at right angles. The pipe has a cross sectional area of 0.03 m². Calculate the force on the wall assuming that the water does not rebound. Density of water = 1000kg/m³)

- (a) 1000 N (b) 300 N
(c) 120 N (d) 240 N

10| GKWU KuP c₁ t₁ oi Dci cwb Xij t₁ j Zv hZUv Qovq `p ZZUv Qovq bv| Gi Kvi YN (If water is poured on a glass surface it splashes. However milk does not splash so much. The reason is—)

- (a) m₁ b₁ ` Zv (viscosity) (b) c₁ p₁ Uv (surface tension)
(c) Df₁ q (both) (d) t₁ Kvb₁ Uv (none)

11| GKWU `e` jwZK cvLvi m₁ p₁ p₁ Ab₁ O Ki t₁ j `kevi c₁ Y^o NY₁ p₁ bi ci cvL₁ v₁ j t₁ K₁ S₁ W₁ K teM 20 rad/s nq| t₁ K₁ S₁ W₁ K Zi₁ Y KZ ? (If the switch of an electric fan is turned 'on' the angular velocity of the fan is 20 rad/s after 10 complete cycle. What is the angular acceleration?)

- (a) 1.83 rad/s² (b) 8.13 rad/s²
(c) 3.18 rad/s² (d) 5.17 rad/s²

12| 256 cycles/s K₁ p₁ v₁ w₁ w₁ k₁ O GKWU mj kj vKv nB₁ Z Drcb₁ e₁ k₁ w₁ Zb t₁ m₁ t₁ K₁ t₁ O 1020 m `i Zi AwZ₁ p₁ g K₁ t₁ i evq₁ t₁ Z k₁ t₁ ai Zi₁ 1/2 ` N^o KZ ? (The sound produced by a tuning fork with frequency 256 cycles/s travels 1020 m in 3 seconds. What is the wavelength of sound in air?)

- (a) 132.8 m (b) 308.7 cm
(c) 132.8 cm (d) 225.5 cm

13| q₁ gZvi gv₁ v₁ N (The dimension of power is—)

- (a) {ML²T⁻²} (b) {ML³T⁻²}
(c) {ML²T⁻³} (d) {ML²T⁻¹}

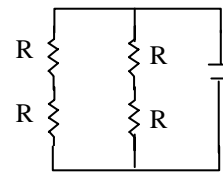
14| 1μF, 2μF Ges 4μF avi KZ₁ w₁ w₁ k₁ O wZb₁ U avi K₁ t₁ K t₁ kY₁ mgev₁ t₁ q m₁ s₁ t₁ h₁ v₁ M t₁ ` qv nj | G₁ t₁ ` i mgZ₁ j ` avi KZ₁ j n₁ t₁ et (Three capacitors of values 1μF, 2μF and 4μF are connected in series. The equivalent capacitance would be—)

- (a) 7 μF (b) 2.63 μF
(c) 1.75 μF (d) 0.57 μF

15| h₁ w₁ P = 2i + 4j - 5k Ges Q = i + 2j + 3k nq Z₁ t₁ e G₁ t₁ ` i ga₁ ` eZ₁ p₁ t₁ K₁ v₁ Y₁ N (If P = 2i + 4j - 5k and Q = i + 2j + 3k then the angle between them is—)

- (a) 78.51° (b) 105.25°
(c) 11.49° (d) 101.49°

16| w₁ b₁ g₁ j w₁ L₁ Z eZ₁ b₁ xi mgZ₁ j ` t₁ i va t₁ K₁ v₁ b₁ U ? (What is the equivalent resistance of the following circuit?)



- (a) 4R (b) R
(c) 3R/4 (d) none

17| 900 kg f₁ t₁ i GKWU U₁ t₁ K N₁ s₁ Uvq 60 km tetM Pj t₁ Q| teK t₁ p₁ t₁ c U₁ t₁ K₁ U 50 wgt ` f₁ i _vgv₁ t₁ bv nj | h₁ w₁ gm₁ U₁ i NI₁ p₁ R₁ w₁ Z ej 200 N nq Z₁ t₁ e te₁ K₁ R₁ w₁ Z et₁ j i gv₁ b w₁ b₁ Y₁ q Ki | (A truck weighing 900 kg travels with a velocity of 60 km/h. By applying brakes the truck was stopped 50 m away. If the frictional force of soil is 200 N what is the force applied by the brakes?)

- (a) 2300 N (b) 2500 N
(c) 2700 N (d) 2400 N

18| Bqs₁ N₁ Gi w₁ O-₁ w₁ Pi ci x₁ q₁ v₁ q w₁ Pi O₁ t₁ qi g₁ t₁ a ` i Zi 2mm| w₁ Pi t₁ t₁ K 1.2 m ` i t₁ t₁ j t₁ W₁ i vi e₁ eav₁ b 0.295mm n₁ t₁ j Av₁ t₁ j vi Zi₁ 1/2 ` N^o KZ ? (In Young's double-slit experiment slits are 2 mm apart and the screen is 1.2m from the slit. If the fringe separation is 0.295 mm, find the wavelength of the light used?)

- (a) 5000 Å (b) 5900 Å
(c) 4916 Å (d) 5916 Å

- 19| 100 Ω τ ivtai GKU M'vj fvbwgUvi 10mA Zvor wdivct` MhY KitZ cvti | 10 A Zvor c'evn gvcvi Rb` KZ τ ivtai GKU m'pUi `iKvi ? (A galvanometer with 100Ω resistance can allow a flow of 10 mA current safely. A shunt of what resistance is needed to measure 10A current?)
 (a) 1.000 Ω (b) 0.110Ω
 (c) 0.200Ω (d) 0.001Ω
- 20| GKU c'Ki 6 dU Mfxi | cwbi c'Zmiv¼ 1.33 n'j c'Kti i AvciZ Mfxi Zv KZ ? (A pond is 6 ft deep. If the refractive index of water is 1.33, what is the apparent depth of the pond?)
 (a) 7.98 ft (b) 4.10 ft
 (c) 0.22 ft (d) 4.51 ft
- 21| GKU mij τ 'vj K c'v_xi t'K'`' w'tj Bnvi τ 'vj bKvj KZ n'te ? (What will be the time period of a simple pendulum if it is taken to the centre of the earth?)
 (a) zero
 (b) infinity
 (c) less than that on the earth surface
 (d) more than that on the earth surface
- 22| t'Kvb w'c'R'tgi b'bZg w'ep'wZ t'KvY 30° | w'c'R'tgi c'ZmivK t'KvY 60° n'j Gi c'Zmiv¼ KZ ? (The angle of minimum deviation of a prism is 30°. If the refractive angle of the prism is 60° what is its refractive index?)
 (a) 1.414 (b) 2.414
 (c) 1.214 (d) 2.141
- 23| 2009 m'tj c`v_w'e'Av'tb huiv b'tej c'j`vi t'c'tq'Ob Zui v n'j b'N (The Nobel Prize winners in Physics for the year 2009 are—)
 (a) A. Einstein and N. Bohr
 (b) I.I. Rabi & W.Pauli
 (c) S.L. Glashow, A Salam and S.Weinberg.
 (d) C.K. Kao, W.S. Boyle and G.E. Smith
- 24| t'Kvb c`v_t`_P Kvh`A'tc`K 1.85 eV | H c`v_fZ m'Pbv K'uv¼ KZ ? (If the work function of an element is 1.85 eV the threshold frequency will be—)
 (a) 4.4×10^{14} Hz (b) 0.44×10^{14} Hz
 (c) 4.4×10^{12} Hz (d) None of the above
- 25| m f'tii GKU e`tK m'uv'p'f'c kv'z'Z ifcv'wi Z Kitj w'K cwi gvY kv'z' w'w'Z n'te ? Av'tj vi teM = c (How much energy will be released if a body of mass m is totally converted into energy. c is the velocity of light.)
 (a) mc (b) m/c^2
 (c) mc^2 (d) c/m^2
- 26| GKU DEj tj'Y Gi 20 cm mvg'tb GKU e`ivLv Av'tQ Ges tj'tYi w'eci'Z cv'tk w'K 20 cm `xi e`w'Uj GKU e'v`e c'Zw'e'`t'Lv t'mj | tj'Yw'Uj t'cv'Kvm `i'Zj KZ ? (An object is placed at a distance of 20 cm from a convex lens. A real image is observed at a distance of exactly 20 cm on the opposite site of the lens. What is the focal length of the lens?)
 (a) 10 cm (b) 15 cm
 (c) 20 cm (d) 40 cm
- 27| GKU e`m'te'P w'e`w' 5.0 m Ges 8.0 s τ 'vj b'K'v'tj mij w'Z M'wZ m'ub'p e`w'Uj m'te'P teM KZ ? (An object is moving with SHM of period 8.0 s and amplitude 5.0 m. What is the maximum velocity of the object?)
 (a) 3.93 m/s (b) 3.13 m/s
 (c) 7.81 m/s (d) 6.20 m/s
- 28| GKU wj d'tUi tg'tStZ ivLv GKU IRb gvcvi h'tsj Dci GKRb 50 kg fi w'ek'ó gv'bj `w'otq Av'tQ | wj d'U w`Z Ae`v t`tK 2 m/s² Zj'tY 1sec a'ti Dc'tii w`tK D'tV, Zvi ci mg`w'z'tZ DV'tZ `v'tK | wj d'U Pj vi ci t`tK IRb gvcvi h'tsj KZ fi t`Lv'te ? (a'ti bvl ga`v'KI'P RubZ Zj'Y 10m/s²) (A man with mass 50 kg is standing on a weighing scale placed on the floor of a lift. The lift starts from rest and accelerates upwards at a rate of 2 m/s² for 1s and then continues upward movement at a uniform speed. What will be the reading on the weighing scale after lift starts moving. Assume acceleration due to gravity is 10m/s²)
 (a) first 60 kg and then 0 kg
 (b) always 50 kg
 (c) first 60 kg and then 50 kg
 (d) always 60 kg

29 | 2 km DPtZ AbfygK c_t 200 m/s mgMzZz DCqbkj GKw tevgi " wegv_tbi Zj t` k t_tK GKw tevgi evab Avj Mv Kti tQto t`qv nj | Gw gwUzZ co_tZ c_lq KZ mgq t_bte? (g_tb Kw c_w ex c_p mgZj Ges ga_vKI_YR_ubZ ZjY 10m/s²) (A bomb is released by simply untying it from underneath of a bomber flying at a constant velocity of 200m/s along the horizontal direction, at a height of 2km. How long will it travel before it hits the ground? Assume the earth's surface to be flat and acceleration due to gravity is 10 m/s².)

- (a) 20 s
- (b) 15 s
- (c) 10 s
- (d) 5 s

30 | GKw nvB_tW_tRb cigvYj D_tE_wRZ Ae⁻vq kw³ -3.4 eV | t_dvU_b w_btmiY K_ti B_tj KUb f_wg Ae⁻vq w_dt_i Av_tm | f_wg_tZ kw³ -13.6 eV | t_dvU_tbi K_uv₁ nj N (In a hydrogen atom electron comes to ground state of energy -13.6 eV from an excited state of energy -3.4 eV by emitting a photon. Find the frequency of the emitted photon?)

- (a) 2.46 × 10¹⁵ Hz
- (b) 4.1 × 10¹⁵ Hz
- (c) 8.2 × 10¹⁵ Hz
- (d) 4.92 × 10¹⁵ Hz

i mvqb (Chemistry)

1 | Kcvi A_vt_bW e⁻envi K_ti Kcvi mvj t_dU-Gi Rj xq `eY B_tj t_uwe_tk_Y Kiv n_tj A_vt_bW th we_wq_v N_tU (The reaction which takes place at the anode when an aqueous solution of copper sulphate is electrolysed using a copper anode ?)

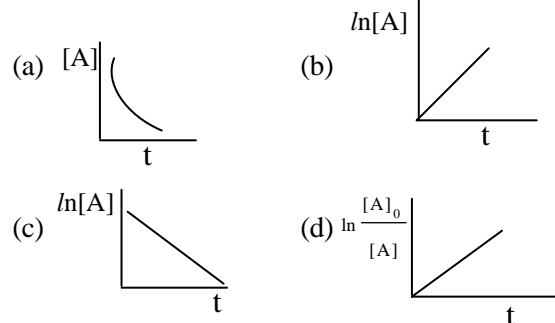
- (a) Cu²⁺(aq)+2e⁻ → Cu(s)
- (b) Cu(s) → Cu²⁺(aq)+2e⁻
- (c) 1/2 H₂(g) → H⁺(aq)+e⁻
- (d) 4OH⁻(aq) → 2H₂O(l) +O₂(g)+4e⁻

2 | GKw eY_uxb Rj xq `e_tY t_kw_ib `e_Y th_vM Kiv n_tj `e_YU ev_gx j_vj e_Y^oaviY K_ti Ges AgNO₃ `e_Y th_vM Kiv n_tj nj_y e_tY^o Aat_t^oc cvl qv hvq | `e_tY

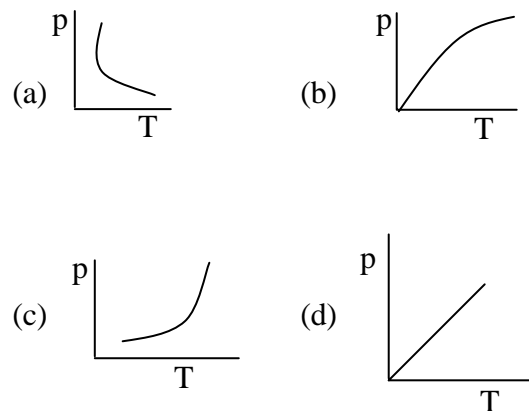
th th_SMU i_tq_tQ (A colourless solution becomes reddish brown when chlorine water is added to it, and a yellow precipitate is formed when AgNO₃ solution is added to it. The solution contains)

- (a) NaCl
- (b) NaNO₃
- (c) Na₂S
- (d) NaBr

3 | A → P we_wq_vi R_b A Gi Aw_w Nbgv_tv [A]₀ Ges t mg_tq Nbgv_tv [A] | we_wq_vU A mv_tc_t c_lg_ut_g n_tj w_bt_ge t_kv_b t_j L_wP_tU mw_k bq? (For the reaction A → P, [A]₀ and [A] are initial concentration and concentration at time t respectively. If the reaction is first order with respect to A, which of the following plots is incorrect ?)



4 | Zvcgv_tvi (T) mv_t Zi_tj i ev^ouPvc (p)cwi eZ_u w_bt_ge t_kv_b t_j L_wP_tU _oviv mw_kf_vte t` Lv_tbv n_tq_tQ ? (Which of the following graphs shows the variation of the vapour pressure 'p' of a liquid with temperature T correctly?)



5 | $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ |
 reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ is exothermic. Which of the following statements is incorrect?)

- (a) Equilibrium constant decreases with temperature
- (b) Catalyst increases the rate of the reaction
- (c) Equilibrium constant increases with pressure
- (d) Yield of NH_3 increases with pressure

6 | |
 (Which of the following atoms has the highest first ionization energy ? The number within the bracket indicates atomic number)

- (a) Li (3)
- (b) B (5)
- (c) N(7)
- (d) O (8)

7 | $X + Y \rightarrow Z$ |
 (The following data are found for the reaction $X + Y \rightarrow Z$. Identify the correct rate equation?)

$[X]_0 / \text{mol L}^{-1}$	1.0	1.0	3.0
$[Y]_0 / \text{mol L}^{-1}$	1.0	2.0	1.0
Initial rate / $\text{mol L}^{-1} \text{s}^{-1}$	0.01	0.02	0.01

- (a) $v = k [X] [Y]$
- (b) $v = k [X] [Y]^2$
- (c) $v = k [Y]$
- (d) $v = k [X]$

8 | |
 (Which monosaccharide is mostly used for metabolism and energy production in human body ?)

- (a) Fructose
- (b) Glucose
- (c) Ribose
- (d) Galactose

9 | |
 (Experimental rate equations for four reactions are given below. Which of these may be an elementary reaction ?)

- (a) $A + B \rightarrow P, v = k [A]^2$
- (b) $C + D \rightarrow P, v = k [C] [D]^2$

(c) $O + O_2 + N_2 \rightarrow O_3 + N_2, v = k [O] [O_2] [N_2]$

(d) $(CH_3)_3 CCl + OH^- \rightarrow (CH_3)_3 C-OH + OH^-, v = k [(CH_3)_3 CCl]$

10 | |
 (Gaseous propene, when passed through an aqueous solution of bromine gives 1,2-dibromopropane, $CH_2BrCHBrCH_3$ along with another product. What is that?)

- (a) $CH_3CHOHCH_2OH$
- (b) $CH_3CHBrCH_2OH$
- (c) $CH_3CH_2CH_3$
- (d) $CH_3CHOHCH_2Br$

11 | |
 (Which of the following molecules contains covalent bonds formed by the overlapping of sp^2 hybrid orbitals and s-orbitals ?)

- (a) NH_3
- (b) $BeCl_2$
- (c) C_2H_2
- (d) C_2H_4

12 | |
 (Identify the particle 'X' in the following nuclear reaction.) $^{14}_7N + X \rightarrow ^{17}_8O + ^1_1H$

- (a) β^- -particle
- (b) neutron
- (c) γ -ray
- (d) α -particle

13 | |
 (What is the hybridization state of Xe in XeF_2)

- (a) sp^3d
- (b) sp^3
- (c) d^2sp^3
- (d) fsp^2

14 | |
 (Which region of atmosphere does contain ozone layer?)

- (a) Troposphere
- (b) Thermosphere
- (c) Mesosphere
- (d) Stratosphere

15 | |
 10g $CaCO_3$ |

- cwi gvY M'vm Drcbæ nq, K¶ ZvcgvÎ vq l 1 evqgÛj Pvfç Zvi AvqZb (Molar mass of CaCO_3 is 100g mol^{-1} . If 10g of CaCO_3 is decomposed by heating, the volume of CO_2 evolved at room temperature and 1 atmospheric pressure is-)
- (a) 2446 mL (b) 240 mL
(c) 24 L (d) 0.24 L
- 16| mgj` i cwbZ tmmW/vqg tKvi vBtWi NbZj (g/mL) KZ? (What is the concentration (g/mL) of NaCl in sea water?)
- (a) 1.26 (b) 2.56
(c) 5.32 (d) 7.98
- 17| C_6H_{12} AvYweK mstKZ weikó GKwJ G'vj wKbZK l Rtbij vBmm Kivi ci wR¼ Gi Dcw`wZtZ Av`® weikwZ Kij vbtgæ tKvb thSMwJ Drcbæ nq ? (Which of the following products is produced when an alkene of molecular formula C_6H_{12} undergoes ozonolysis followed by treatment with water in presence of zinc?)
- (a) CH_3CHO (b) CH_3COCH_3
(c) HCHO (d) $\text{CH}_3\text{CH}_2\text{CHO}$
- 18| tKvb weiqKwJ AvqvtWvdg`ci¶vq Ask tbq bv ? (Which of the following reagents will not respond to iodoform test).
- (a) $\text{CH}_3\text{CH}_2\text{OH}$ (b) $\text{CH}_3\text{CHOHCH}_3$
(c) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ (d) $\text{CH}_3\text{COCH}_2\text{CH}_3$
- 19| Avr`® AlCl_3 Gi Dcw`wZtZ GwUvBj tKvi vBtWi mvt`tebwRb mvgvb` DÈB Kij th`è` Drcbæ nq Zv n¶Q- (The substance obtained when benzene is mildly heated with acetyl chloride in presence of dry AlCl_3 is -)
- (a) Acetone (b) Acetophenone
(c) Phenol (d) Benzyl chloride
- 20| 1-weDUvBb Ges 2-weDUvBb Gi cv`R`KijY tKvb weiqKwJ e'eÜZ nq ? (Which of the following reagents can be used to distinguish between 1-butyne and 2-butyne?)
- (a) $\text{Br}_2 / \text{CCl}_4$ (b) H_2 / Pt
(c) I_2 / KOH (d) $\text{Cu}^{2+} / \text{OH}^-$
- 21| Gj vBj AvtqvWvBtWi mstKZ wbt`R` Ki (Indicate the formula of allyl iodide)
- (a) $\text{CH}_3=\text{CH}=\text{CH}_2\text{I}$ (b) $\text{CH}_2=\text{CH}-\text{CH}_2\text{I}$
(c) $\text{CH}\equiv\text{CH}-\text{CH}_2\text{I}$ (d) $\text{CH}_2\text{I}-\text{CHI}-\text{CH}_3$
- 22| evqgÛtj tKvb wv`¶ M'vm mevnaK cvl qv hvq ? (Which inert gas is mostly available in the atmosphere?)
- (a) He (b) Ar
(c) Ne (d) Kr
- 23| 200 mL 0.075 M `èY `Zwi tZ wK cwi gvY Na_2CO_3 c¶qvRb ? (How much Na_2CO_3 is needed to prepare 200mL 0.075 M solution?)
- (a) 1.59 g (b) 10.60 g
(c) 2.18 g (d) 0.53 g
- 24| 7.1 Mlg tKwi tbi gta` KZ tgvj Cl_2 itqtQ? (How many moles of Cl_2 are there in 7.1 g of chlorine?)
- (a) 0.1 mol (b) 1.0 mol
(c) 0.2 mol (d) 0.4 mol
- 25| B_vBb AYtZ th aitbi eÜb AvtQ, tm_tjv n¶QÑ (Types of bonds present in an ethyne molecule are)
- (a) 2σ , and 2π (b) 3σ , and 2π
(c) 2σ , and 1π (d) 3σ , and 3π
- 26| 'f' AiwUvj me¶gvU KqvW Btj Kub aviY Kitz cvti ? (How many electrons can 'f' orbital hold in maximum?)
- (a) 10 (b) 8
(c) 18 (d) 14
- 27| Na_2CO_3 tK SiO_2 Gi mvt`_ D`P ZvcgvÎ vq DÈB Kij CO_2 Qvov Ab` GKwJ `è` Drcbæ nq hvi AvYweK mstKZ nj (The molecular formula of the product obtained other than CO_2 , when Na_2CO_3 is strongly heated with SiO_2 is)
- (a) $\text{NaHCO}_3, \text{SiO}_2$ (b) $\text{Na}_2\text{Si}_2\text{O}_4$
(c) $\text{Na}_2\text{Si}_2\text{O}_3$ (d) Na_2SiO_3
- 28| vbtgæ weiqvW c¶Y Ki (Complete the following reaction)
- $$6\text{Fe}^{2+} + \text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ \rightarrow 6\text{Fe}^{3+} + \dots + 7\text{H}_2\text{O}$$
- (a) Cr^{2+} (b) Cr^{3+}
(c) 2Cr^{3+} (d) $\text{Cr}(\text{OH})_3$
- 29| B_vbj ev`ú D`PZvcgvÎ vq Al_2O_3 Gi Dci w`tq Pij bv Kij th`è` cvl qv hvq Zv n¶Q- (The substance obtained after passing ethanol vapour at elevated temperature over Al_2O_3 is-)
- (a) $\text{HOCH}_2-\text{CH}_2\text{OH}$ (b) $\text{CH}\equiv\text{CH}$
(c) CH_3OH (d) $\text{CH}_2=\text{CH}_2$
- 30| Btj KUtbi fi (The mass of electron is)
- (a) $5.5 \times 10^{-23}\text{g}$ (b) $10.7 \times 10^{-17}\text{g}$
(c) $9.1 \times 10^{-28}\text{g}$ (d) $9.1 \times 10^{-30}\text{g}$

12 | $\cos 198^\circ + \sin 432^\circ + \tan 168^\circ + \tan 12^\circ$ Gi gvb
(The value of $\cos 198^\circ + \sin 432^\circ + \tan 168^\circ + \tan 12^\circ$ is)

- (a) 0 (b) -1
(c) 1 (d) $\frac{1}{2}$

13 | $e^{-x} > 5$ AmgZwUj mgvavb (The solution set of the inequality $\frac{1}{|2x-3|} > 5$ in real number is)

- (a) $\left(\frac{7}{5}, \frac{3}{2}\right)$ (b) $\left(\frac{3}{2}, \frac{8}{5}\right)$
(c) $\left(\frac{7}{5}, \frac{3}{2}\right) \cup \left(\frac{3}{2}, \frac{8}{5}\right)$ (d) $\left(\frac{7}{5}, \frac{8}{5}\right)$

14 | $f(x) = \sin x, g(x) = x^2$ ntj $f\left(g\left(\frac{\sqrt{\pi}}{2}\right)\right)$ Gi gvb

(If $f(x) = \sin x, g(x) = x^2$, then the value of $f\left(g\left(\frac{\sqrt{\pi}}{2}\right)\right)$ is)

- (a) $\frac{\sqrt{2}}{2}$ (b) $\frac{\sqrt{3}}{2}$
(c) $\frac{1}{2}$ (d) 1

15 | $4(\sin^2\theta + \cos\theta) = 5$ mgvavb (The general solution of $4(\sin^2\theta + \cos\theta) = 5$ is)

- (a) $2n\pi \pm \frac{\pi}{2}$ (b) $2n\pi \pm \frac{\pi}{3}$
(c) $2n\pi \pm \frac{\pi}{4}$ (d) $2n\pi \pm \frac{\pi}{5}$

16 | $i^2 = -1$ ntj $\frac{i^{-1}-i}{2i^{-1}+i}$ Gi gvb (If $i^2 = -1$, then the value of $\frac{i^{-1}-i}{2i^{-1}+i}$ is)

- (a) -2i (b) 2i
(c) -2 (d) 2

17 | $\cos\theta = \frac{12}{13}$ ntj $\tan\theta$ Gi gvb (If $\cos\theta = \frac{12}{13}$, then the value of $\tan\theta$ is)

- (a) $\pm \frac{5}{12}$ (b) $\frac{25}{144}$
(c) $\frac{13}{12}$ (d) $\pm \frac{13}{12}$

18 | $\lim_{x \rightarrow 0} \frac{\sin x^2}{x} = ?$

- (a) 1 (b) -1
(c) 0 (d) 2

19 | $x^2 + xy + y^2 = 2$ ntj $(3, -4)$ me' tZ $\frac{dy}{dx}$ Gi gvb
(If $x^2 + xy + y^2 = 2$ then the value of $\frac{dy}{dx}$ at the point $(3, -4)$ is)

- (a) $\frac{2}{5}$ (b) $\frac{5}{2}$
(c) $\frac{3}{8}$ (d) $\frac{8}{3}$

20 | $y = \ln(x + \sqrt{x^2 + 4})$ ntj $\frac{dy}{dx}$ mgvavb

(If $y = \ln(x + \sqrt{x^2 + 4})$, then $\frac{dy}{dx}$ is)

- (a) $\sqrt{x^2 + 4}$ (b) $\frac{1}{1 + \sqrt{x^2 + 4}}$
(c) $1 + \sqrt{x^2 + 4}$ (d) $\frac{1}{\sqrt{x^2 + 4}}$

21 | $\int \frac{dx}{e^x + e^{-x}} = ?$

- (a) $\tan(e^x) + c$ (b) $\tan^{-1}(e^x) + c$
(c) $\tan^{-1}(e^x + e^{-x}) + c$ (d) $\tan^{-1}(e^{-x}) + c$

22 | $\int_1^e \ln x dx$ Gi gvb (The value of $\int_1^e \ln x dx$ is)

- (a) e (b) e-1
(c) 1 (d) 1-e

23 | $z = 3x + 4y$ mgvavb Ki (Solve the following linear programming problem):
Mwi oKi Y Ki (Maximize) $z = 3x + 4y$
kZht'Q (subject to the constraint)

$$x + y \leq 7, 2x + 5y \leq 20, x \geq 0, y \geq 0$$

- (a) (5, 2) (b) (7, 0)
(c) (10, 0) (d) (0, 7)

24 | 40 ntZ 50 msL'v, wj t'K ePqb c'wZtZ GKwJ msL'v fbqv nj | msL'vU tg'uj K bv nI qvi m'v'Zv KZ? (One of the numbers from 40 to 50 is selected at random. What is the probability that the number is not a prime number?)

- (a) $\frac{8}{11}$ (b) $\frac{5}{11}$
(c) $\frac{3}{11}$ (d) $\frac{1}{11}$

25 | $\int \frac{1}{\cos^2 x \sqrt{\tan x}} dx = ?$

- (a) $\sqrt{\tan x} \ln(\cos^2 x) + c$ (b) $2\sqrt{\tan x} + c$
 (c) $\frac{2}{3}(\tan x)^{3/2} + c$ (d) $2\sqrt{\tan x} + c$

26 | $\int_0^1 \frac{\cos^{-1} x}{\sqrt{1-x^2}} dx$ Gi gvb (The value of $\int_0^1 \frac{\cos^{-1} x}{\sqrt{1-x^2}} dx$)

- (a) $\frac{\pi^2}{8}$ (b) $\frac{\pi^2}{2}$
 (c) $\frac{\pi}{8}$ (d) $\frac{\pi}{4}$

27 | u teM AbfngtKi mt_ α tKvY c β e⁻ⁱ mtePP D^oPZv (The greatest height attained by a projectile projected with a velocity of u at an angle α with the horizon is)

- (a) $\frac{u^2 \sin 2\alpha}{2g}$ (b) $\frac{u^2 \sin^2 \alpha}{2g}$
 (c) $\frac{u^2 \sin 2\alpha}{g}$ (d) $\frac{u^2 \sin^2 \alpha}{g}$

28 | GKwU etj U tKvb t` l qvtj i gta` 2 BwA XKvi ci Dnvi AfaR teM nvi vq| etj U wU t` l qvtj i gta` Avi l KZ `i XKte ? (A bullet fired into a wall losses half its velocity after penetrating 2 inches. How far further will it penetrate ?)

- (a) 2" (b) $\left(\frac{2}{3}\right)''$
 (c) 1" (d) $\left(\frac{1}{2}\right)''$

29 | 3P Ges 2P ej θ tqi j wa R| c θ g ej w θ Y Ki tj j wa i cwigvYl w θ Y nq| ej θ tqi A θ MZ tKvY (The resultant of two forces 3P and 2P is R. If the first force is doubled then the resultant is also doubled. The angle between the forces is)

- (a) 130° (b) 120°
 (c) 110° (d) 110°

30 | `kngK msL`v 214 Gi wngK AvKvti cKvk (The decimal number 214 expressed in binary form is)

- (a) 11010110 (b) 10100110
 (c) 10011100 (d) 11001001

RivneAvb (Biology)

- 1 | t^ovgvUv Lj tZ tKvbWU `vqx etj wetePPZ ? (Which one is considered responsible to open stomata ?)
 (a) sunlight (b) glucose
 (c) chloroplast (d) potassium ion
- 2 | R θ g θ θ vtg θ th ai tbi mm θ cvl qv hvq- (Kind of endosperm found in gymnosperm is)
 (a) haploid (b) diploid
 (c) triploid (d) tetraploid
- 3 | n θ vP A θ vU θ θ K P θ t θ c θ g θ θ vqx c θ v θ (First stable product in Hatch and Slack cycle is)
 (a) malic acid (b) oxaloacetic acid
 (c) pyruvic acid (d) phosphoglyceric acid
- 4 | tKvb e θ vt θ wi qv GKKfvte tMj vKvi wK θ gvj vi gZ web θ - θ vtK ? (Which bacteria are individually spherical but remain like a chain ?)
 (a) *Micrococcus denitrificans*
 (b) *Diplococcus pneumoniae*
 (c) *Streptococcus lactis*
 (d) *Staphylococcus aureus*
- 5 | θ t θ vtgv θ mvg bZ θ θ tKvl wfvR θ bi tKvb `kvq t` Lv hvq ? (In which phase of cell division "Chromosome dance" is found ?)
 (a) prophase (b) prometaphase
 (c) anaphase (d) telophase
- 6 | w θ t θ Pi tKvbWU tZ θ vBj vK θ qW θ vtK ? (In which of the following thylakoid is present ?)
 (a) chloroplast (b) mitochondria
 (c) ribosome (d) lysosome
- 7 | tKvbWU tKv-GbRvBg ? (Which one is a coenzyme ?)
 (a) phosphorylase (b) NADP⁺
 (c) sucrase (d) amylase
- 8 | evsj vt θ tki w θ j θ c θ q D θ v θ n θ j v- (Endangered plant of Bangladesh is)
 (a) *Ficus benghalensis*
 (b) *Knema bengalensis*
 (c) *Prema bengalensis*
 (d) *Commelina bengalensis*
- 9 | evsj vt θ tki cwbtZ Av θ m θ t θ Ki mnbrq gv θ v- (Tolerance limit of arsenic in drinking water of Bangladesh is)
 (a) 0.1 mg/L (b) 0.01 mg/L
 (c) 0.05 mg/L (d) 0.5 mg/L

- *****
- 10 | $c^{\circ}uqtb$ $dvBtUvt\mu v g$ -Gi $KvhKwi$ Zv $me\hat{e}_g$ $Awe^{\circ}vi$ $K\ddot{t}ib$ - (The role of phytochrome in flowering was first discovered by)
 (a) Hamner and Bonner
 (b) Borthwick and Hendricks
 (c) Garner and Allard
 (d) None of them
- 11 | $tKvbW$ $fvBivm$ -Gi $\hat{e}wk\acute{o}$ bq ? (Which one is not a characteristic of virus ?)
 (a) GK $tKvl$ $wenk\acute{o}$ (single-celled structure)
 (b) $wbDwKK$ Gmw $Av\acute{t}Q$ (presence of nucleic acid)
 (c) $t\dot{c}vl$ $K\ddot{t}$ $\ddot{t}n$ $eskej\ddot{x}tZ$ $m\ddot{t}lg$ (ability to multiply in host cell)
 (d) eva $Zvgj$ K Ci $Rxex$ (obligate parasite)
- 12 | Lv $P\ddot{t}\mu$ kw^3 $c\hat{e}v\ddot{t}n$ $tKvbW$ mZ ? (Which one is true for energy flow in food chain ?)
 (a) no energy loss (b) 50% energy loss
 (c) 90% energy loss (d) 98% energy loss
- 13 | $B\ddot{t}j$ KUb $UvY\ddot{t}cvU^{\circ}m\ddot{t}$ $\ddot{t}g$ $me\ddot{t}kl$ $B\ddot{t}j$ $\pm b$ $M\ddot{t}xZv$ $n\ddot{t}j$ v - (In electron transport system the last electron acceptor is)
 (a) oxygen (b) carbon dioxide
 (c) cytochrome (d) water
- 14 | $tKvb$ $Dw^{\circ}c$ $Drcv$ $\ddot{t}bi$ Rb $civMavbx$ $Avev$ $e^{\circ}e\ddot{u}Z$ nq ? (For the production of which plant anther culture is used ?)
 (a) homozygous dominant plant
 (b) double haploid plant
 (c) heterozygous plant
 (d) disease free plant
- 15 | $wUmyKvj$ Pvi $c^{\times}vZ\ddot{t}Z$ $wefvRb\ddot{t}lg$ $tKvl$ $\ddot{t}\ddot{t}K$ $\hat{Z}wi$ $Dw^{\circ}c$ $Pvivi$ $\hat{e}wk\acute{o}$ $n\ddot{t}j$ v - (The characteristics of plantlet produced from meristem through tissue culture is)
 (a) $tivM$ $c\hat{Z}\ddot{t}iva$ $m\ddot{t}lg$ (to resist disease)
 (b) $tivM$ $M\ddot{t}\ddot{t}Y$ mg_{\circ} (to being susceptible to disease)
 (c) $tivM$ gy^3 vKv (to remain disease free)
 (d) $tivM$ $c\hat{Z}\ddot{t}ivaKiY$ (to control disease)
- 16 | $B\ddot{t}Uvi$ $K^{\circ}v\ddot{t}j$ $\ddot{t}UW$ wV $tKvb$ $ai\ddot{t}bi$ $Kjvi$ $\hat{e}wk\acute{o}$? (Intercalated disc is the characteristic of which tissue ?)
 (a) \ddot{u} $wcivUq$ Kjv (cardiac tissue)
 (b) $m\ddot{t}jyKjv$ (nervous tissue)
 (c) $Aw^{\circ}q$ Kjv (skeletal tissue)
 (d) $Aw\acute{S}K$ Kjv (intestinal tissue)
- 17 | $tKvbW$ Bvj k $gv\acute{t}Qi$ $m\ddot{t}WK$ $\hat{e}A\ddot{w}bK$ bvg ? (Which one is the correct scientific name of hilsha fish ?)
 (a) *Tenuolosa ilisha* (b) *Tenulosa ilisha*
 (c) *Tenuolosa ilisa* (d) *Tenuolosa ilisha*
- 18 | *Plasmodium* Gi $tKvb$ $c\hat{R}wZ$ $gvb\acute{t}l$ $t\ddot{m}i$ $e\ddot{t}j$ $g^{\circ}v\ddot{t}j$ wi qv $NUvq$? (Which species of *Plasmodium* does cause cerebral malaria in man ?)
 (a) *Plasmodium ovale*
 (b) *Plasmodium vivax*
 (c) *Plasmodium falciparum*
 (d) *Plasmodium malariae*
- 19 | $tKvb$ $ai\ddot{t}bi$ $tbgv\acute{t}Uwm$ \div Gi $m\hat{t}$ KwU $Lv\acute{t}Uv$ I $KuUwenxb$? (Which type of nematocyst has a short and spineless thread ?)
 (a) $\ddot{t}\div$ $\hat{c}\acute{t}Uwvj$ b $M\ddot{t}b^{\circ}vU$ (streptoline glutinant)
 (b) fj $\ddot{t}f\ddot{t}U$ (volvent)
 (c) $w\div$ $\ddot{t}bwUj$ (stenotile)
 (d) $\ddot{t}\div$ wi I wj b $M\ddot{t}b^{\circ}vU$ (stereoline glutinant)
- 20 | Zi Yw° $tKvb$ $AveiY$ $\ddot{t}vivi$ $AveZ$ $v\acute{t}K$? (Cartilage is covered by which lining)
 (a) $t\dot{c}wi$ $Aw\div$ qvq (periostium)
 (b) $t\dot{c}wi$ $KwU\acute{t}qvg$ (perichondrium)
 (c) $t\dot{c}wi$ $U\ddot{t}dK$ $tgg\acute{t}eb$ (peritrophic membrane)
 (d) $wKwUk$ (cuticle)
- 21 | $\hat{b}^{\circ}cvqx$ $c\hat{t}Yxi$ $w\ddot{t}gi$ ai b - (The kind of mammalian egg is-)
 (a) BDw wi $qv b$ (eutherian)
 (b) $gvB\ddot{t}\mu v\ddot{t}j$ wm vj (microlecithal)
 (c) cwj $\ddot{t}j$ wm vj (polylecithal)
 (d) $\ddot{t}U\ddot{t}j$ $v\ddot{t}j$ wm vj (telolecithal)
- 22 | $tKvb$ ni $tgvb$ ti $P\ddot{t}b$ $fvgKv$ $i\acute{t}L$? (Which hormone does play a role in excretion ?)
 (a) SSH (b) FSH
 (c) ADH (d) GTH
- 23 | $c^{\circ}vbwRqv$ -Gi Pwi $cv\acute{t}ki$ Rj i wki bvg wQj - (The name of waterbody surrounding the Pangaea was-)
 (a) j $\ddot{t}i$ $wmqv$ (Laurasia)
 (b) $\ddot{t}Uw$ m $m\ddot{t}Mi$ (Tethys sea)
 (c) $M\hat{U}qvbn$ (Gondwana)
 (d) $c^{\circ}vb$ vj vm (Panthalus)

- 24 | ICZN Gi cY^obg- (ICZN stands for-)
- International Cooperation on Zoological Nomenclature
 - International Community on Zoological Nomenclature
 - International Commission on Zoological Nomenclature
 - International Committee on Zoological Nomenclature
- 25 | g^ovi c^ovb Dc^ov^o vb tKvbU ? (Which one is the main component of pearl?)
- calcium sulphate
 - calcium chloride
 - calcium carbonate
 - calcium oxide
- 26 | 'Historium Animalium' M^oš^oi i P^oqZv tK ? (Who is the author of the book 'Historium Animalium' ?)
- j^ovgK^o(Lamarck)
 - A^owi t^ovUj (Aristotle)
 - g^ovMbvM (Magnus)
 - W^oi DBb (Darwin)
- 27 | tKvb avi YwU tKvI Zt^oEj mvt^o m^ou^omK^o ? (Which concept is related to the cell theory ?)
- tKvI mKj Ro e^o MVt^obi GKK (cell is the structural unit of all non-living things)
 - mKj tKvI B tRt^obUJ^owj AwFb^oe (all cells are genetically identical)
 - mKj tKvI B tD^om^o (all cells are self-generated)
 - tKvI mKj R^oeš^o-e^o i Kg^oRv^ot^oUi GKK (cells are the functional unit of all living things)
- 28 | GKwU c^oUgK DI mvBU t^otK tkl ch^oš^o-wbtg^o tKvbU^o Zwi nq ? (Which one of the following is produced finally from a primary oocyte ?)
- GKwU wW^oYyI wZbU t^ocvj vi eW (one ovum and three polar bodies)
 - B^oU wW^oYyI B^oU t^ocvj vi eW (two ova and two polar bodies)
 - wZbU wW^oYyI GKwU t^ocvj vi eW (three ova and one polar body)
 - i ayPvi wU wW^oYy (four ova only)
- 29 | th wRb^o eik^o cKv^ot^ok evav cvq Zv^ot^oK etj - (The gene which is obstructed to express is called-)
- nvB^ot^ocv^o wUK (hypostatic)
 - G^owc^o wUK (epistatic)
 - wj^o vj (lethal)
 - K^ow^ot^ogUwi (complementary)

- 30 | wbtg^o tKvbU^o Øviv ivB^otevRg MwZ ? (Ribosome is composed of-)
- wWGbG I Avi GbG (DNA and RNA)
 - w^ot^o÷vb, wWGbG I Avi GbG (histone, DNA and RNA)
 - i ayw^ot^o÷vb (only histone)
 - t^ocUwB I Avi GbG (protein and RNA)

evsj v (Bangla)

- 1 | ØAvR nVvr Avgvi AZ^oš^o-wbKtU AwZ enr GKUv^o biv^ot^oR^oi Mn^oYi t^owL^ot^oZ cvBj vgO | Nt^oKvb i P^obvi AšM^o ?
- ngš^o (b) Aa^oz
 - wej v^om^ox (d) Kgj vKv^ot^oš^o Revbew^o
- 2 | evsj v AwFav^ot^ob Ø^oq^o N Gi Ae^o-vb tKv^ovq ?
- ØL^o - e^ot^oY^o c^ot^oi
 - Øn^o - e^ot^oY^o c^ot^oi
 - Øi^o - e^ot^oY^o c^ot^oi
 - ØK^oØ^oNe^ot^oY^o AšM^o f^oq^o w^ot^omt^oe
- 3 | Øiv^o-v ch^oš^o-tZvgvq ti tL Avme wK ? Ø N Øvej v^om^oØ M^ot^oi K^owU Kvi ?
- wej v^om^oi (b) b^ovovi
 - gZi^oÄt^oqi (d) AvZ^oqv^oi
- 4 | Øthgb Kg^ot^oZgb dj Ø N ti Lw^o4Z k^owU Kx ?
- m^ot^oc^oq me^ovg (b) w^oi^ow^o
 - w^ot^okl^ot^oYi w^ot^okl^oY (d) m^oU^o c^o
- 5 | ØKei^oØ KweZvi tQvU dcyKZ eQi eqtm gvi v hvq ?
- mvZ (b) cvP
 - tZi (d) bq
- 6 | Øweevn m^ou^ot^oK^oAv^ogvi gZ hvPvB Kiv Abvek^oK wQj | Ø N GuU tKvb ai^ot^obi ev^oK^o ?
- Av^o-evPK (b) Aby^oAv evPK
 - tbwZevPK (d) bT^oØ
- 7 | ti^ot^oKqv mvLvI qvZ tnv^ot^omb Kw^o_Z Acw^o_Ø m^ou^om^oE^oN
- Rwq (b) w^o%ZwI Zv
 - Mš^o (d) mwPK^og^o
- 8 | ØAv^ogvi ce^oevsj wØ KweZvq ce^oevsj vi t^on w^oth^o b^oxj v^ot^ot^oZ tNiv N Zvi Dcgv tKvbU ?
- ivØv Drcj (b) w^oth^o Zgvj
 - AÜK^ot^oi i Abj vM (d) cØvp wK^oÄ

- 9 | cY[©]evtK GKwaK faxb evK[†]vstki cti etmN
 (a) tKvj b (b) tmggtKvj b
 (c) nvBtdb (d) W'vk
- 10 | tKvbW evsj v ZvXZ cZ[†]qhy³ kã ?
 (a) i uapx (b) Ni wq
 (c) tajj vB (d) cvbxq
- 11 | DcmM[†] kãN
 (a) we0vb (b) weRij
 (c) weÁvb (d) weUc
- 12 | ÚRÁwme Rtb Rtb0 N evK[†]Uj w0i "r³ Kx w tq MwZ ?
 (a) we†KIY (b) we†KI[†]
 (c) msL[†]vevPK kã (d) euePb
- 13 | ÚPr Ú-Gi mgv_℞ kãN
 (a) fvby (b) wbk[†]w[†]bx
 (c) tKvgj Kvš- (d) i RbxKvš-
- 14 | w0†Pi tKvbW ti v†Kqv mvLvl qvZ tnv†m†bi Rb†-gZi
 mvj ?
 (a) 1880 N 1947 (b) 1881 N 1933
 (c) 1880 N 1932 (d) 1888 N 1938
- 15 | tKvbW AbyM[©]?
 (a) Gi (b) G†i
 (c) Z†i (d) ti
- 16 | ÚVÚ-Z; weavb Abyv†i w0†Pi tKvb evvbb Ai x ?
 (a) ifcqvY (b) M0Y
 (c) cj†Yv (d) wbi fcy
- 17 | Úi w††Z ti s[†] nq | ÚN GB ev†K[†] wKtmi Afve ?
 (a) AvKv[†]v (b) thvM[†]Zv
 (c) Ašq (d) AvmE
- 18 | fveev†P[†]i D[†] vni YN
 (a) SMov Kiv D†PZ bq |
 (b) c0Yve[†] v cov n†q†Q |
 (c) A†b†KB „i“ Lvevi tL†Z Pvq bv |
 (d) tPvi Úv†K aiv tMj bv |
- 19 | Úc[†]w[†] ex0 k†ãi we†KIY N
 (a) RMr (b) wbmM[©]
 (c) cvw[†] e (d) wbwLj
- 20 | Avime fvlv t[†]†K AvMZ kã N
 (a) Avj gwii (b) Av†j vKb
 (c) Avj wcb (d) Avj vgZ
- 21 | Úw[†]i0 k†ãi wecixZ kã N
 (a) R½g (b) avi vewwK
 (c) AveZ[©] (d) m[†]†i
- 22 | 'Meteor' -Gi cwi fvlvN
 (a) ag†KZ† (b) a[†]eZiv
 (c) AvM†Mj K (d) Dév

- 23 | ÚAwg G mv††x PvB bv | Ú Nmij evK[†]Uj RwJ ifcN
 (a) Awg th mv††x PvB bv Zv bq |
 (b) Awg† G mv††x PvB bv |
 (c) th-mv††x G-i Kg Zv†K Awg PvB bv |
 (d) Awg G-i Kg mv††x PvB†Z cwi bv |
- 24 | tKvbW thšMK[†] †aYwb ?
 (a) I (b) H
 (c) D (d) G
- 25 | 'Shakespeare' -bvtgi cÚZeY†KIYN
 (a) tm[†] wqci (b) tkK†wqci
 (c) tmKkcxqi (d) tkKk†wqci
- 26 | `*ZZv ÁvcK w0i "3 kãN
 (a) Ki Ki (b) Zi Zi
 (c) gigi (d) mi mi
- 27 | ÚUkv fvm[†] bv vK†j tKv†bv i Pbv fuj Kwj qv tevSv hvq
 bvB | ÚN†j Z i wZi evK[†]U†Z f†j i msL[†]vN
 (a) Pvi (b) cvP
 (c) vZb (d) `B
- 28 | Kwj gwii `dv[†] v†i evj[†] Kv†j i cvZv†bv †[†] v†† bvgN
 (a) tgv[†] v†eYi Lwj dv (b) mvBc†j vLwj dv
 (c) mvBRw† Lwj dv (d) gqRw† Lwj dv
- 29 | 'Do not smile at anybody.'- B††wR evK[†]Uj
 h[†]vh[†] evsj vN
 (a) KvD†K w0†q i wKZv Ki †e bv |
 (b) KvD†K w0†q gRv Ki †e bv |
 (c) KvD†K KUv†† Ki †e bv |
 (d) KvD†K we[†] jc Ki †e bv |
- 30 | Úkvš0-k†ãi mwUwe†"Q[†] N
 (a) kvb†+ Z (b) kvt + Z
 (c) kvg + Zn (d) kvg†+ Z

English

Read the following passage and answer questions 1 –5:

Once a bird is brought to a rehabilitation center, basic procedures are followed. First, the bird is sedated, if necessary, and examined to detect broken bones, cuts or other injuries. Next, oil is flushed from its eyes and intestines. Heavily oiled birds are then wiped with adsorbent cloths to remove patches of oil. Stomach-coating medicines may be administered orally to prevent additional absorption of oil inside the bird's stomach. The bird is then warmed and placed in a quiet area. Finally, curtains are often hung around the area to limit the bird's contact with people.

1. The passage is about:
 (a) The preservation of aquatic creatures from water pollution.
 (b) Measures taken to treat a broken limb of a bird.
 (c) The treatment of a water bird after an oil spill.
 (d) Preventive measures taken to rehabilitate an infected bird.
2. "the bird is sedated" means:
 (a) the bird is put to sleep
 (b) the bird is fixed or fastened
 (c) the bird is examined through the use of radiation
 (d) the bird is examined for documentation
3. 'Absorption' is the process of –
 (a) soaking up liquid or other substance
 (b) turning of liquid into vapour
 (c) becoming weaker or worse
 (d) becoming larger or expanding
4. "additional" in the passage is a/an –
 (a) adverb (b) verb
 (c) noun (d) adjective
5. The spelling of "center" is–
 (a) American English (b) British English
 (c) Australian English (d) Indian English
6. **Choose the correct meaning of the idiom:**
 'call it a day'
 (a) to raise doubts
 (b) to stop work since enough has been done
 (c) to be unhappy with the weather
 (d) to pay someone a visit
- Choose the correct options (7–17)**
7. He has retired _____ business and moved _____ private life completely.
 (a) from, into (b) for, with
 (c) of, to (d) to, in
8. The bookmark was placed _____ pages ten and eleven.
 (a) around (b) between
 (c) in (d) on
9. I can't quite _____ out what the sign says.
 (a) make (b) read
 (c) get (d) carry
10. It is difficult for me to _____ exactly what I mean in a foreign language.
 (a) speak (b) express
 (c) pronounce (d) address
11. Prodig went to bed after he _____ his lesson.
 (a) learnt (b) learning
 (c) had learn (d) had learnt
12. I have read the book _____ you lent me.
 (a) whom (b) what
 (c) whose (d) that
13. _____ him yet? Now is your chance to do so.
 (a) Don't you meet
 (b) Haven't you met
 (c) Hadn't you met
 (d) Weren't you meeting
14. Don't make the noise while your father _____.
 (a) is being asleep (b) asleep
 (c) is sleeping (d) has slept
15. She arrived so late _____ allowed to enter.
 (a) and as not to be (b) for not to be
 (c) so not to be (d) that she was not
16. My house is _____ comfortable than my father's.
 (a) very (b) much
 (c) to (d) much more
17. Neither of my brothers is handsome, but both _____ to be flattered.
 (a) likes (b) like
 (c) liking (d) were liked
- Identify the correct sentence: (18–21)**
18. (a) He washed neither his hand or his face.
 (b) He washed neither his hand nor his face.
 (c) He washed neither his hand or face.
 (d) He washed neither his hand and also neither his face.

19. (a) He is working hardly to stand first.
 (b) He is working hard to stand first.
 (c) He works hard to standing first.
 (d) He was working hard to stand first.
20. (a) When my father died, I was only ten years old.
 (b) When my father died. I was only ten years old.
 (c) When my father died and I was only ten years old.
 (d) When my father died. However, I was only ten years old.
21. (a) Do you want tea? Or coffee. They are both ready
 (b) Do you want tea or coffee? They are both ready
 (c) Do you want tea or coffee, they are both ready?
 (d) Do you want tea or coffee. They are both ready?
22. **Choose the correct verb form:** Once the peace accord had been signed, the guerrillas _____ their arms.
 (a) laid down (b) lain down
 (c) lying down (d) laying down
- Choose the correct interrogative forms (23–24)**
23. (a) Which of the pictures you like best?
 (b) Which of the pictures are you like best?
 (c) Which of the pictures do you like best?
 (d) Which of the picture is you like best?
24. (a) Do you think Mr. and Mrs Alam will invite you to their house?
 (b) Do you think Mr. and Mrs Alam invite you to their house?
- (c) Do you think the house invites Mr. and Mrs Alam?
 (d) Do you think Mr. and Mrs Alam will be invite you to their house?
25. **Choose the correct article:** He can play _____ flute.
 (a) no article needed (b) the
 (c) an (d) a
26. **Choose the appropriate tag:** For the boys, the task was quite easy, _____?
 (a) weren't they (b) didn't they
 (c) wasn't it (d) isn't it
- Choose the appropriate option: (27–30)**
27. The correct antonym of the word 'ominous' is—
 (a) Auspicious (b) Potent
 (c) Unlucky (d) Evil
28. The synonym of the word 'Gruesome' is—
 (a) Dreadful (b) Frightful
 (c) Horrific (d) All of the above
29. Find the incorrectly spelled word
 (a) committee (b) receive
 (c) seperate (d) psychology
30. Choose the correct translation of †m AZ Š-aZ©
 (a) He is very intelligent
 (b) He is very clever
 (c) He is very difficult
 (d) He is very sloppy