

ঢাকা বিশ্ববিদ্যালয়

‘ক’-ইউনিট

Set Code : 2

ঢাকা বিশ্ববিদ্যালয় (মসৃব) তকয়ি ফিউচিফি 2009-2010

মগ ত 1 নঐ 45 ঁগু

চয়গু ত 120

চিফিফিফি চিফিফিফি

1) OMR ডঐচিফি

(K) ডচি ফিফিফিফি বগ, ঁচিফি বগ I গিফি বগ ফিউচিফিফি আফে বচিফি থ ফিফি Ges থফিফি তি Lv আফি তফিফিফি
ঁ লিফি নঐ চিফিফিফি ফিফিফি আফি, ডঐচিফিফি ফিফি ঐ ফিফিফিফি তফিফিফি ফিফিফিফি ফিফিফিফি

(L) চিফিফিফি **Roll No., Serial No. I Set Code** ঁ লিফিফিফি চিফিফিফি

2) চিফিফিফি চিফিফিফি চিফিফিফি PviU ডঐ তি Lqv আফি | মফিফি ডঐফিফি তেফিফি ফিফি OMR ডঐচিফিফি ফিফিফি ফিফিফিফি
ফিফিফিফি ফিফিফিফি ফিফিফিফি ফিফিফিফি ফিফিফিফি ফিফিফিফি

3) চিফিফিফি ডঐফিফি Rb 0.25 বঐফি ফিফিফি Ges Zv ফিফিফিফিফিফিফিফিফিফি

4) GKB চিফিফিফি GKB ডঐফিফি MhYthM েফিফি

5) চিফিফিফিফি ডিফিফি ফিফিফিফিফি Calculation Kiv হিফি | আফিফিফিফিফি Kiv হিফি

6) **Calculator** েফিফি Kiv হিফি | Zte **Programming** Kiv হিফি Ggb **Calculator** েফিফি Kiv হিফি

7) চিফিফিফিফি ফিফিফিফি চিফিফিফিফিফি Z েফিফি Kiv হিফি

8) চিফিফিফিফি মফিফিফিফি মফিফিফিফি চিফিফিফিফি Lv eU Kite Ges ডঐচিফিফিফি চিফিফিফিফি MhY ফিফিফিফি
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9) চিফিফিফিফি ডিফিফিফি চিফিফিফিফি

চিফিফিফিফি ফিফিফিফিফি

(K) মফিফিফিফি চিফিফিফিফি Physics, Chemistry, Mathematics Ges Biology GB Pvi ফিফিফিফি ডঐফিফি
চিফিফিফিফিফি গিফিফিফি GKB ev েফিফিফি D েফিফিফি ev মগিফিফি চিফিফিফিফি Aa েফিফিফি
Bangla A_ev/Ges English ফিফিফিফিফি PviU ফিফিফিফি

(L) Physics, Chemistry, Mathematics Ges Biology D েফিফিফিফি চিফিফিফিফি Aa েফিফিফি
ফিফিফিফিফি Bangla A_ev English ফিফিফিফিফি ডঐফিফিফি

(M) PviU আফিফিফি ডঐফিফিফি Kite ডঐচিফিফিফি গিফিফিফি Kiv হিফি

(N) চিফিফিফিফি ফিফিফিফি Kiv Am েফিফিফি Aej েফিফি Kite ev Aej েফিফিফি ফিফিফিফি চিফিফিফিফিফি Kiv হিফি Ges Zvi চিফিফিফিফি
েফিফি MY েফিফি

(O) চিফিফিফিফি Kite গিফিফিফিফি েফিফিফিফিফি Ges ফিফিফিফি Kite Zv চিফিফিফিফি Am েফিফিফি Aej েফিফিফি
MY েফিফি Kiv হিফি

0.03m^2 | aiv hvK cw b t` qvj t` tK wi evDÚ Ki tQ bv | t` qvtj i Dci cw b wK cw igvY ej cÚqvM Ki tQ ? (cwb i NbZ; 1000 kg/m^3) (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 m^2 . Calculate the force on the wall assuming that the water does not rebound. Density of water = 1000kg/m^3)

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

10 | GKwU KwP c`oi Dci cw b Xvj t`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) m` Zv (viscosity) (b) cÚUv (surface tension)
(c) Dfq (both) (d) tKvbuB bv (none)

11 | GKwU `e` ymZK cvLvi mBP ÚAbÚ Ki t`j `kevi cY© NY#bi ci cvLwUi tKŠwYK teM 20 rad/s nq | tKŠwYK ZiY 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/s^2 (b) 8.13 rad/s^2
(c) 3.18 rad/s^2 (d) 5.17 rad/s^2

12 | 256 cycles/s K`úv¼ wewkÚ GKwU mj kj vKv nBtZ Drcbækā wZb tm tK tÚ 1020 m ` i Zi AwZµg Kti | evq tZ k t`ai Zi ½ ` N© 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 | ¶gZvi gv vN (The dimension of power is—)

- (a) $\{ML^2 T^{-2}\}$ (b) $\{ML^3 T^{-2}\}$
(c) $\{ML^2 T^{-3}\}$ (d) $\{ML^2 T^{-1}\}$

14 | $1\mu\text{F}$, $2\mu\text{F}$ Ges $4\mu\text{F}$ avi KZi wewkÚ wZbuU avi K tK tkYx mgextq msthvM t` qv nj | Gt` i mgZj` avi KZi

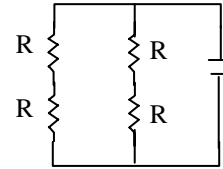
n`et (Three capacitors of values $1\mu\text{F}$, $2\mu\text{F}$ and $4\mu\text{F}$ are connected in series. The equivalent capacitance would be—)

- (a) $7\mu\text{F}$ (b) $2.63\mu\text{F}$
(c) $1.75\mu\text{F}$ (d) $0.57\mu\text{F}$

15 | h` $\vec{P} = 2\hat{i} + 4\hat{j} - 5\hat{k}$ Ges $\vec{Q} = \hat{i} + 2\hat{j} + 3\hat{k}$ nq Zte Gt` i ga`eZP tKvYN (If $\vec{P} = 2\hat{i} + 4\hat{j} - 5\hat{k}$ and $\vec{Q} = \hat{i} + 2\hat{j} + 3\hat{k}$ then the angle between them is—)

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

16 | wbgwLZ eZxi mgZj` tiva tKvbuU ? (What is the equivalent resistance of the following circuit?)



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

17 | 900 kg fti i GKwU ÚtK NÚvq 60 km teM Pj tQ | teK tPtC ÚtKwU 50 m gt ` fi _vgvfv nj | h` gwUi NIYRwbZ ej 200 N nq Zte teKRwbZ etj i gv b wY@ 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 | BqsNGi wÚwPi ci x¶vq wPi Útqi gta` ` i Zi 2mm | wPi t` tK 1.2 m ` i tZi tWwivi e`eavb 0.295mm ntj Avtj vi Zi ½ ` N© 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 | $100\ \Omega$ tivtai GKwU Mij fv t`bwglvi 10mA Zwor w b ivc t` MÚY Ki tZ cvti | 10 A Zwor cÚv n gvcvi Rb` KZ tivtai GKwU mvfUi ` i Kvi ? (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) 1.000Ω (b) 0.110Ω
(c) 0.200Ω (d) 0.001Ω

20 | GKU cKi 6 dU Mfxi | cwi bi cZmiv¼ 1.33 ntj cKti 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 t'vj K cU_xi tKt'³ wbtj Bnvi t'vj bKvj KZ nte ? (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 | tKvb wRtgi b-bZg wePwZ tKvY 30° | wRtgi cZmivK tKvY 60° ntj Gi cZmiv¼ 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 mtj c`v_eÁvtb huiv btej cj`vi tctqtQb Zuv ntj bN (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 | tKvb c`vt_® Kv h®Atc¶K 1.85 eV | H c`v_¶Z mPbv K³¼ 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 ftii GKU e`tK m³Y¶c k³tZ ifcvšmiz Kijt wK cwi gvY k³ wBMZ nte ? Avtjvi 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 mgvfb GKU e`ivLv AvtQ Ges tj tYi weciXZ cvtk wK 20 cm `fi e`wji GKU ev`e cZwe^t`Lv tMj | tj Ywji tcvKvm `tZj 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`mtePP we`wi 5.0 m Ges 8.0 s t'vj bKvtj mij Qw`Z MwZ m³ub¶ e`wji mtePP 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 dtUi tgtStZ ivLv GKU IRb gvcvi htšj Dci GKRb 50 kg fi wenkó gvbj `wotq AvtQ | wj dU w`Z Ae`v t_tK 2 m/s^2 ZjtY 1sec atj Dctii w`tK DtV, Zvi ci mg`wZtZ DVtZ `vtK | wj dU Pjvi ci t_tK IRb gvcvi htšj KZ fi t`Lvte ? (atj bvl ga`vKI¶ RvbZ ZjY 10 m/s^2) (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/s^2 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 10 m/s^2)

- (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 ct_ 200 m/s mgMwZtZ DÇqbkxj GKU tevgvi " wegvfbi Zjt`k t_tK GKU tevgvi ewab Avj Mv Kti tQto t`qv nj | GuU gwUtZ cotZ cQ KZ mgq tbe? (gtb Kwí cU_ex cP mgZj

Ges ga'vKIYRwbZ ZjY 10m/s^2) (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 10m/s^2 .)

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

30| GKwU nBtWtRb cigvYj DtEwRZ Ae⁻vq kw³ -3.4eV | tduUb wotmiY Kti Btj KUb fvg Ae⁻vq wdti Avtm | fvgtZ kw³ -13.6eV | tduUti K³uv^{1/4} njN (In a hydrogen atom electron comes to ground state of energy -13.6eV from an excited state of energy -3.4eV by emitting a photon. Find the frequency of the emitted photon?)

- (a) $2.46 \times 10^{15}\text{Hz}$ (b) $4.1 \times 10^{15}\text{Hz}$
(c) $8.2 \times 10^{15}\text{Hz}$ (d) $4.92 \times 10^{15}\text{Hz}$

i mvqb (Chemistry)

1| Kcvi A'vbtW e'envi Kti Kcvi mvj tdu-Gi Rj xq 'eY Btj t'wtkW Kiv ntj A'vbtW th wemqvn NtU (The reaction which takes place at the anode when an aqueous solution of copper sulphate is electrolysed using a copper anode ?)

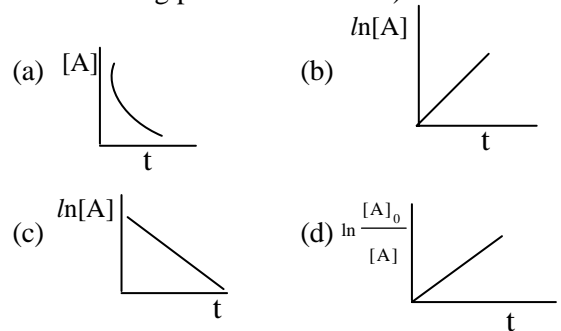
- (a) $\text{Cu}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Cu}(\text{s})$
(b) $\text{Cu}(\text{s}) \rightarrow \text{Cu}^{2+}(\text{aq}) + 2\text{e}^-$
(c) $\frac{1}{2}\text{H}_2(\text{g}) \rightarrow \text{H}^+(\text{aq}) + \text{e}^-$
(d) $4\text{OH}^-(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g}) + 4\text{e}^-$

2| GKwU eY'wB Rj xq 'eY tKwib 'eY thwM Kiv ntj 'eYwU ev'vqx jvj eY'aviY Kti Ges AgNO_3 'eY thwM Kiv ntj njy eY' Aat'c cvl qv hvq | 'eY th thSMwU itqtQ (A colourless solution becomes reddish brown when chlorine water is added to it, and a yellow precipitate is formed when

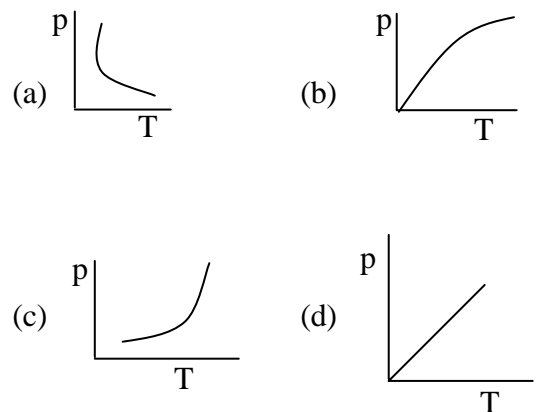
AgNO_3 solution is added to it. The solution contains)

- (a) NaCl (b) NaNO_3
(c) Na_2S (d) NaBr

3| $\text{A} \rightarrow \text{P}$ wemqvi Rb' A Gi Aw' NbgvT v $[\text{A}]_0$ Ges t mgtq NbgvT v $[\text{A}]$ | wemqvw A mvtct' c'gmutg ntj wbtgic tKvb tj LwPTw mWK bq? (For the reaction $\text{A} \rightarrow \text{P}$, $[\text{A}]_0$ and $[\text{A}]$ 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| ZvcgvT vi (T) mvt_ Zi tj i ev'Pvc (p) cwi eZB wbtgic tKvb tj LwPT' Øviv mWKfite t' Lvtbv ntqtQ ? (Which of the following graphs shows the variation of the vapour pressure 'p' of a liquid with temperature T correctly?)



5| $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ wemqvw Zvtcvc' x | wemqvw m'ut'wbtgic tKvb Dw'w mWK bq ? (The reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ is

heating, the volume of CO₂ evolved at room temperature and 1 atmospheric pressure is—)

- (a) 2446 mL (b) 240 mL
(c) 24 L (d) 0.24 L

16) mgf` i cwb`Z tmmWvqg tKwi vB`Wi 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) C₆H₁₂ AvYweK ms`KZ wekó GKw G`vj wKb`K IR`bjj vBimm Kivi ci wR¼ Gi Dcw`wZ`Z Av`® we`k`wZ Ki`j wbtg`e tKvb th`Smw Drcb`e nq ?
(Which of the following products is produced when an alkene of molecular formula C₆H₁₂ undergoes ozonolysis followed by treatment with water in presence of zinc?)

- (a) CH₃CHO (b) CH₃COCH₃
(c) HCHO (d) CH₃CH₂CHO

18) tKvb we`p`qKw Av`q`w`w`dg`ci`v`v`q Ask tbq bv ?
(Which of the following reagents will not respond to iodoform test).

- (a) CH₃CH₂OH (b) CH₃CHOHCH₃
(c) CH₃CH₂CH₂OH (d) CH₃COCH₂CH₃

19) Av`®AlCl₃ Gi Dcw`wZ`Z GwUvBj tKwi vB`Wi mv`_ tebwRb mv`v`b` D`E`B Ki`j th` `e` Drcb`e nq Zv n`®`Q-
(The substance obtained when benzene is mildly heated with acetyl chloride in presence of dry AlCl₃ is -)

- (a) Acetone (b) Acetophenone
(c) Phenol (d) Benzyl chloride

20) 1-weDUvBb Ges 2-weDUvBb Gi cv`_R`Ki`Y tKvb we`p`qKw e`e`u`Z nq ? (Which of the following reagents can be used to distinguish between 1-butyne and 2-butyne?)

- (a) Br₂ / CCl₄ (b) H₂ / Pt
(c) I₂ / KOH (d) Cu²⁺ / OH⁻

21) Gj vBj Av`q`w`w`B`Wi ms`KZ wbt` R` Ki (Indicate the formula of allyl iodide)

- (a) CH₃=CH=CH₂I (b) CH₂=CH-CH₂I
(c) CH≡CH-CH₂I (d) CH₂I-CHI-CH₃

22) ev`q`g`U`j tKvb w`v`®`E` M`i`m mev`®`a`K cvl`q`v` hv`q` ?
(Which inert gas is mostly available in the atmosphere ?)

- (a) He (b) Ar
(c) Ne (d) Kr

23) 200 mL 0.075 M `eY `Zwi`Z wK cwi`g`v Na₂CO₃ c`®`q`v`R`b ? (How much Na₂CO₃ 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 M`g tKwi`b`i g`t`a` KZ t`g`v` Cl₂ i`t`q`®`Q? (How many moles of Cl₂ 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`_`v`B`b Av`Y`Z th` ai`b`i e`U`b Av`®`Q, t`m`_`t`j`v n`®`Q`N`
(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

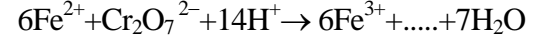
26) `f` Ai`we`U`v`j me`®`g`v`U` K`q`w` B`j` K`U`b` av`i`Y` Ki`Z` cv`i` ?
(How many electrons can 'f' orbital hold in maximum ?)

- (a) 10 (b) 8
(c) 18 (d) 14

27) Na₂CO₃ tK SiO₂ Gi mv`_ D`P`Z`vc`g`v`I`v`q` D`E`B` Ki`j` CO₂ Q`v`v` Ab` G`K`w` `e` Drcb`e`n`q` h`v`i` Av`Y`we`K` ms`K`Z` n`j` (The molecular formula of the product obtained other than CO₂, when Na₂CO₃ is strongly heated with SiO₂ is)

- (a) NaHCO₃, SiO₂ (b) Na₂Si₂O₄
(c) Na₂Si₂O₃ (d) Na₂SiO₃

28) w`b`t`g`®` we`p`q`w`U` c`i`Y` Ki (Complete the following reaction)



- (a) Cr²⁺ (b) Cr³⁺
(c) 2Cr³⁺ (d) Cr(OH)₃

29) B`_`v`b`j` ev`®`ú` D`P`Z`vc`g`v`I`v`q` Al₂O₃ Gi Dci` w` t`q` P`j` bv` Ki`j` th` `e` cvl`q`v` hv`q` Zv n`®`Q`- (The substance obtained after passing ethanol vapour at elevated temperature over Al₂O₃ is-)

- (a) HOCH₂-CH₂OH (b) CH≡CH
(c) CH₃OH (d) CH₂=CH₂

30) B`j` K`U`b`i` fi (The mass of electron is)

- (a) 5.5 × 10⁻²³g (b) 10.7 × 10⁻¹⁷g
(c) 9.1 × 10⁻²⁸g (d) 9.1 × 10⁻³⁰g

গণিত (Mathematics)

3 | A, B, C wex`y, wj i `vbw¼ h_vµtg (a, bc), (b,ca), (c,ab) ntj ΔABC Gi t¶¶dj KZ ? (If the co-ordinates of the points A,B,C are respectively (a,bc), (b,ca), (c,ab) ; what is the area of the ΔABC?)

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

2 | $2x - 3y + 6 = 0$ ti Lvi Dci j x^ Ges (1,-1) wex` ¶mgx mij ti Lvi mgxKiY (The equation of the straight line passing through the point (1,-1) and perpendicular to the line $2x-3y+6 = 0$ is)

- (a) $3x + 2y = 1$ (b) $3x - 2y = 5$
 (c) $3x + 2y = 5$ (d) $2x + 3y = 1$

3 | GKw e¶Ei mgxKiY wby¶ Ki hvi tKt`¶ `vbw¼ (2, 3) Ges $x+y-2 = 0$ ti LwU e¶tK `úkKti | (Find the equation of the circle whose centre is at (2, 3) and the line $x+y-2 = 0$ touches the circle.)

- (a) $2(x^2 + y^2) - 8x - 12y + 17 = 0$
 (b) $2(x^2 + y^2) - 6x - 10y + 15 = 0$
 (c) $2(x^2 + y^2) - 4x - 8y + 11 = 0$
 (d) $2(x^2 + y^2) - 2x - 6y + 7 = 0$

4 | 6 Rb QvI Ges 5 Rb QvIx t_tK 5 R¶bi GKw KwgU MVb Ki tZ nte hvZ AšZ GKRB QvI I GKRB QvIx _vtK | KZ wewfbæcKv¶i G KwgU MVb Kiv hrte ? (A committee of 5 is to be formed from 6 male and 5 female students. In how many ways can this be done so that the committee contains at least one male and one female student?)

- (a) 455 (b) 360
 (c) 144 (d) 720

5 | $\left(\frac{2}{3}x^2 - \frac{1}{3}x\right)^9$ Gi we`wZtZ x ewRZ c` nj - (In the expansion of $\left(\frac{2}{3}x^2 - \frac{1}{3}x\right)^9$ the term independent of x is)

- (a) $\frac{224}{3^8}$ (b) $-\frac{224}{3^8}$
 (c) $\frac{242}{3^8}$ (d) $-\frac{242}{3^8}$

6 | n Zg c` chS-1.2.3 + 2.3.4 + 3.4.5 +aviwUj thwMdj (The sum of n terms of the series 1.2.3 + 2.3.4 + 3.4.5 + is)

- (a) $n(n+1)(n+2)(n+3)$

(b) $(n+1)(n+2)(n+3)(n+4)$

(c) $\frac{1}{2} n(n+1)(n+2)(n+3)$

(d) $\frac{1}{4} n(n+1)(n+2)(n+3)$

7 | $x^2 - 7x + 12 = 0$ mgxKi¶Yi gj ¶q α Ges β ntj $\alpha + \beta$ Ges $\alpha\beta$ gj wewkó mgxKiY (If α, β be the roots of the equation $x^2 - 7x + 12 = 0$, then the equation whose roots are $\alpha + \beta$ and $\alpha\beta$ is)

- (a) $x^2 - 19x + 84 = 0$ (b) $x^2 + 14x - 144 = 0$
 (c) $x^2 - 14x + 144 = 0$ (d) $x^2 + 19x - 84 = 0$

8 | ω hw` 1 Gi GKw RwUj Nbgj nq, Zte cōE wby¶KwUj gvb (If ω is a complex cube root of unity, then the value of the given

determinant is) :
$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$$

- (a) 0 (b) 1
 (c) ω (d) ω²

9 | $\begin{pmatrix} p+4 & 8 \\ 2 & p-2 \end{pmatrix}$ gwU¶ wU ewZµgx nq hw` p Gi gvb

(The matrix $\begin{pmatrix} p+4 & 8 \\ 2 & p-2 \end{pmatrix}$ is singular, if the values of p are)

- (a) -6, 4 (b) -4, 6
 (c) -4, 2 (d) -2, 4

10 | $y^2 = 4x + 8y$ civeEwUj kx¶e` j `vbw¼N (The co-ordinates of the vertex of the parabola $y^2 = 4x + 8y$ is)

- (a) (4, 4) (b) (-4, -4)
 (c) (4, -4) (d) (-4, 4)

11 | $\vec{B} = 6\hat{i} - 3\hat{j} + 2\hat{k}$ t¶t¶i Dci $\vec{A} = 2\hat{i} + 2\hat{j} + \hat{k}$ t¶t¶i Awf¶¶C (The projection of vector $\vec{A} = 2\hat{i} + 2\hat{j} + \hat{k}$ on the vector $\vec{B} = 6\hat{i} - 3\hat{j} + 2\hat{k}$ is)

- (a) $\frac{8}{7}$ (b) $\frac{7}{8}$
 (c) $\frac{8}{5}$ (d) $\frac{5}{8}$

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 | $e^{-x} > 5$ AmgZwUli 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 | $4(\sin^2\theta + \cos\theta) = 5$ mgxKiYi mvaviY 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 | $\cos\theta = \frac{12}{13}$ nq, Zvntj $\tan\theta$ 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 $(3, -4)$ wex`fZ $\frac{dy}{dx}$ Gi gvb (If $x^2 + xy + y^2 = 2$ then the value of $\frac{dy}{dx}$ at the point $(3, -4)$ is)

- (a) $2/5$ (b) $5/2$
 (c) $3/8$ (d) $8/3$

20 | $y = \ln(x + \sqrt{x^2 + 4})$ nq, Zte $\frac{dy}{dx}$ mgvbN

(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 | wbtgie wj wbcvqi tCUMQs mgm'vi mgvavb Ki (Solve the following linear programming problem):

Mwi oKiY Ki (Maximize) $z = 3x + 4y$
 kZ^9h^0 (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`wZfZ GKwJ msL'v tbcv nj | msL'wJ tgs'w'j K bv nI qvi m'oe`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 mvt_ α tKvY cñB e-i mtePP D'PZv (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 etjU tKvb t' l qvtj i gta" 2 BwA XKvi ci Dnvi AtaR teM nvi vq | etjUwU 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 0tqi j wa R | c0g ej w0_Y Ki tj j wa i cwigvYl w0_Y nq | ej 0tqi AŠMZ 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 | `kugK msL'v 214 Gi w0ugK AvKvfi cKvk (The decimal number 214 expressed in binary form is)

(a) 11010110 (b) 10100110

(c) 10011100 (d) 11001001

RxeveÁvb (Biology)

1 | t÷vgyUv Lj tZ tKvbWU `vqx etj wetePPZ ? (Which one is considered responsible to open stomata ?)

- (a) sunligth (b) glucose
(c) chloroplast (d) potassium ion

2 | Rxtgē úrtg® th ai tbi mm" cvl qv hvq- (Kind of endosperm found in gymnosperm is)

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

3 | n'vP A'vU `K P tµ c0g `vqx c`v_® (First stable product in Hatch and Slack cycle is)

- (a) malic acid (b) oxaloacetic acid
(c) pyruvic acid (d) phosphoglyceric acid

4 | tKvb e'vt±wi qv GKkfvte tMjvKvi wKŠ' gvj vi gZ web" -_vK ? (Which bacteria are individually spherical but remain like a chain ?)

- (a) *Micrococcus denitrificans*
(b) *Diplococcus pneumoniae*
(c) *Streptococcus lactis*
(d) *Staphylococcus aureus*

5 | 0tµvtgvtmvg bZ'0 tKvl wfvR tbi tKvb `kvq t`Lv hvq ? (In which phase of cell division "Chromosome dance" is found ?)

- (a) prophase (b) prometaphase
(c) anaphase (d) telophase

6 | wbtPi tKvbWU tZ _vBj vKtqW _vK ? (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`tki wej β c0q DwM© ntj v- (Endangered plant of Bangladesh is)

- (a) *Ficus benghalensis*
(b) *Knema bengalensis*
(c) *Prema bengalensis*
(d) *Commelina bengalensis*

9 | evsj vt`tki cwbtZ Avtm0tKi mnbrq gvI 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'uvqtb dvBtUvtµvg-Gi KvRwii Zv me0g Awewi Ktib- (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 | *Plasmodium falciparum*-*Plasmodium vivax* bə? (Which one is not a characteristic of virus ?)
 (a) GK tKvI wəkó (single-celled structure)
 (b) wəDwKk GmW AvtQ (presence of nucleic acid)
 (c) tcvI Kt̄ ɪn eskeɪpɪz mɪŋg (ability to multiply in host cell)
 (d) eva Zvgj K ci Rɪex (obligate parasite)
- 12 | Lv̄ P̄t̄ɪ kw̄³ c̄v̄t̄n tKvI mZ̄ ? (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 | B̄t̄j KUB ŪȲt̄cvI w̄m̄t̄ ÷ t̄g mef̄kl B̄t̄j ±b M̄h̄xZv n̄t̄j v- (In electron transport system the last electron acceptor is)
 (a) oxygen (b) carbon dioxide
 (c) cytochrome (d) water
- 14 | tKvI Dw̄m̄c Drcv̄ t̄bi Rb̄ c̄ivMavbx Avev̄ ēēüZ 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 | w̄UmyKvj Pvi c̄x̄vZ̄Z wefvRb̄ŋg tKvI t̄t̄K Z̄wi Dw̄m̄c P̄vivi w̄kó n̄t̄j v- (The characteristics of plantlet produced from meristem through tissue culture is)
 (a) t̄ivM c̄Z̄t̄iva m̄ŋg (to resist disease)
 (b) t̄ivM M̄h̄t̄Y mḡ[©] (to being susceptible to disease)
 (c) t̄ivM ḡj³ v̄Kv (to remain disease free)
 (d) t̄ivM c̄Z̄t̄ivaKiY (to control disease)
- 16 | B̄Uvi K̄v̄t̄j t̄UW w̄v̄ t̄KvI aīt̄bi K̄jvi w̄kó ? (Intercalated disc is the characteristic of which tissue ?)
 (a) ǖ w̄c̄w̄q K̄j v (cardiac tissue)
 (b) m̄w̄jK̄j v (nervous tissue)
 (c) Av̄q K̄j v (skeletal tissue)
 (d) Aw̄š̄K̄ K̄j v (intestinal tissue)
- 17 | tKvI w̄ Bij k ḡv̄t̄Qi m̄w̄K ēÁv̄bK bvg ? (Which one is the correct scientific name of hilsha fish ?)
 (a) *Tenuolosa ilisha* (b) *Tenuolosa ilisha*
 (c) *Tenuolosa ilisa* (d) *Tenuolosa ilisha*
- 18 | *Plasmodium* Gi tKvI c̄R̄w̄Z ḡv̄t̄l t̄m̄wi ēt̄j ḡv̄t̄j 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 | tKvI aīt̄bi t̄b̄ḡv̄t̄Uw̄m̄ ÷ Gi m̄f̄ K̄w̄ Lv̄t̄Uv I K̄w̄Uw̄en̄x̄b ? (Which type of nematocyst has a short and spineless thread ?)
 (a) t̄ ÷ c̄t̄Uw̄j b M̄h̄b̄v̄U (streptoline glutinant)
 (b) f̄j t̄f̄U (volvent)
 (c) w̄ ÷ t̄b̄w̄j (stenotile)
 (d) t̄ ÷ wi I w̄j b M̄h̄b̄v̄U (stereoline glutinant)
- 20 | Zi Ȳw̄ t̄KvI AveiY Øvi v AveZ v̄t̄K ? (Cartilage is covered by which lining)
 (a) t̄c̄wi Av̄ ÷ qv̄g (periostium)
 (b) t̄c̄wi K̄w̄ŋq̄v̄g (perichondrium)
 (c) t̄c̄wi Ūt̄c̄K t̄ḡḡt̄eb (peritrophic membrane)
 (d) w̄K̄D̄w̄K̄j (cuticle)
- 21 | b̄c̄v̄q̄ c̄Ÿxi w̄w̄t̄gi ai b- (The kind of mammalian egg is-)
 (a) BD̄w̄i q̄vb (eutherian)
 (b) ḡv̄B̄t̄m̄v̄t̄j w̄m̄_v̄j (microlecithal)
 (c) c̄w̄j t̄j w̄m̄_v̄j (polylecithal)
 (d) t̄Ūt̄j v̄t̄j w̄m̄_v̄j (telolecithal)
- 22 | tKvI ni t̄ḡvb ti P̄t̄b f̄w̄ḡK̄v i v̄t̄L ? (Which hormone does play a role in excretion ?)
 (a) SSH (b) FSH
 (c) ADH (d) GTH
- 23 | c̄v̄b̄w̄R̄q̄-Gi P̄wi c̄v̄t̄ki R̄j i w̄ki b̄vg w̄Q̄j - (The name of waterbody surrounding the Pangaea was-)
 (a) j̄ t̄i w̄mq̄ (Laurasia)
 (b) t̄Uw̄_m̄ m̄v̄Mi (Tethys sea)
 (c) M̄Ūq̄v̄b̄ (Gondwana)
 (d) c̄v̄b̄_v̄j w̄m̄ (Panthalus)
- 24 | ICZN Gi c̄Ȳ[©] b̄vg- (ICZN stands for-)
 (a) International Cooperation on Zoological Nomenclature
 (b) International Community on Zoological Nomenclature

- (c) International Commission on Zoological Nomenclature
 (d) International Committee on Zoological Nomenclature

25 | $g\ddot{y}\ddot{v}i\ c\ddot{a}n\ddot{b}\ Dc\ddot{v}\ddot{v}\ddot{b}\ \ddot{t}\ddot{K}\ddot{v}\ddot{b}\ddot{u}\ ?$ (Which one is the main component of pearl?)

- (a) calcium sulphate
 (b) calcium chloride
 (c) calcium carbonate
 (d) calcium oxide

26 | 'Historium Animalium' $M\ddot{O}\ddot{S}\ddot{t}\ddot{i}\ i\ P\ddot{r}\ddot{q}\ddot{Z}\ddot{v}\ \ddot{t}\ddot{K}\ ?$ (Who is the author of the book 'Historium Animalium'?)

- (a) $j\ \ddot{v}\ddot{g}\ddot{v}\ddot{K}\ddot{L}\ddot{a}\ddot{m}\ddot{a}\ddot{r}\ddot{c}\ddot{k}$ (Lamarck)
 (b) $A\ \ddot{w}\ddot{i}\ \ddot{t}\ \ddot{v}\ddot{U}\ddot{j}$ (Aristotle)
 (c) $g\ \ddot{m}\ddot{b}\ddot{v}\ddot{m}$ (Magnus)
 (d) $W\ddot{i}\ \ddot{D}\ddot{B}\ddot{b}$ (Darwin)

27 | $\ddot{t}\ddot{K}\ddot{v}\ddot{b}\ \ddot{a}\ddot{v}\ddot{i}\ \ddot{Y}\ddot{w}\ddot{u}\ \ddot{t}\ddot{K}\ddot{v}\ddot{l}\ \ddot{Z}\ddot{t}\ddot{E}\ddot{j}\ \ddot{m}\ddot{v}\ddot{t}\ \ddot{m}\ddot{a}\ddot{u}\ddot{m}\ddot{K}\ddot{Z}\ ?$ (Which concept is related to the cell theory?)

- (a) $\ddot{t}\ddot{K}\ddot{v}\ddot{l}\ \ddot{m}\ddot{K}\ddot{j}\ \ddot{R}\ddot{o}\ \ddot{e}\ \ddot{M}\ddot{V}\ddot{t}\ddot{b}\ddot{i}\ \ddot{G}\ddot{K}\ddot{K}$ (cell is the structural unit of all non-living things)
 (b) $\ddot{m}\ddot{K}\ddot{j}\ \ddot{t}\ddot{K}\ddot{v}\ddot{l}\ \ddot{B}\ \ddot{t}\ddot{R}\ddot{t}\ddot{b}\ddot{u}\ddot{K}\ddot{w}\ddot{j}\ \ddot{A}\ddot{u}\ddot{f}\ddot{b}\ddot{e}$ (all cells are genetically identical)
 (c) $\ddot{m}\ddot{K}\ddot{j}\ \ddot{t}\ddot{K}\ddot{v}\ddot{l}\ \ddot{B}\ \ddot{D}\ddot{m}\ddot{Z}$ (all cells are self-generated)
 (d) $\ddot{t}\ddot{K}\ddot{v}\ddot{l}\ \ddot{m}\ddot{K}\ddot{j}\ \ddot{R}\ddot{x}\ddot{e}\ddot{s}\ddot{e}\ \ddot{e}\ \ddot{i}\ \ddot{K}\ddot{g}\ddot{R}\ddot{v}\ddot{t}\ddot{U}\ddot{i}\ \ddot{G}\ddot{K}\ddot{K}$ (cells are the functional unit of all living things)

28 | $G\ddot{K}\ddot{w}\ddot{u}\ \ddot{c}\ddot{O}\ \ddot{v}\ddot{g}\ddot{K}\ \ddot{D}\ddot{l}\ \ddot{m}\ddot{v}\ddot{B}\ddot{U}\ \ddot{t}\ \ddot{t}\ddot{K}\ \ddot{t}\ddot{k}\ \ddot{c}\ddot{h}\ddot{S}\ \ddot{w}\ddot{b}\ddot{t}\ddot{g}\ddot{i}\ \ddot{t}\ddot{K}\ddot{v}\ddot{b}\ddot{u}\ \ddot{Z}\ddot{w}\ddot{i}\ \ddot{n}\ddot{q}\ ?$ (Which one of the following is produced finally from a primary oocyte?)

- (a) $G\ddot{K}\ddot{w}\ddot{u}\ \ddot{w}\ddot{v}\ddot{a}\ddot{f}\ddot{y}\ddot{l}\ \ddot{w}\ddot{Z}\ddot{b}\ddot{u}\ \ddot{t}\ddot{c}\ddot{v}\ddot{j}\ \ddot{v}\ddot{i}\ \ddot{e}\ddot{w}\ddot{w}$ (one ovum and three polar bodies)
 (b) $\ddot{B}\ddot{u}\ \ddot{w}\ddot{v}\ddot{a}\ddot{f}\ddot{y}\ddot{l}\ \ddot{B}\ddot{u}\ \ddot{t}\ddot{c}\ddot{v}\ddot{j}\ \ddot{v}\ddot{i}\ \ddot{e}\ddot{w}\ddot{w}$ (two ova and two polar bodies)
 (c) $\ddot{w}\ddot{Z}\ddot{b}\ddot{u}\ \ddot{w}\ddot{v}\ddot{a}\ddot{f}\ddot{y}\ddot{l}\ \ddot{G}\ddot{K}\ddot{w}\ddot{u}\ \ddot{t}\ddot{c}\ddot{v}\ddot{j}\ \ddot{v}\ddot{i}\ \ddot{e}\ddot{w}\ddot{w}$ (three ova and one polar body)
 (d) $\ddot{i}\ \ddot{a}\ddot{y}\ddot{P}\ddot{v}\ddot{i}\ \ddot{w}\ddot{u}\ \ddot{w}\ddot{v}\ddot{a}\ddot{f}\ddot{y}\ddot{l}$ (four ova only)

29 | $\ddot{t}\ddot{h}\ \ddot{w}\ddot{R}\ddot{b}\ \ddot{e}\ddot{w}\ddot{k}\ddot{O}\ \ddot{c}\ddot{K}\ddot{v}\ddot{t}\ddot{k}\ \ddot{e}\ddot{v}\ddot{a}\ddot{v}\ \ddot{c}\ddot{v}\ddot{q}\ \ddot{Z}\ddot{v}\ddot{t}\ddot{K}\ \ddot{e}\ddot{t}\ddot{j}\ -$ (The gene which is obstructed to express is called-)

- (a) $\ddot{n}\ddot{v}\ddot{B}\ddot{t}\ddot{c}\ddot{v}\ \ddot{v}\ddot{w}\ddot{U}\ddot{K}$ (hypostatic)
 (b) $\ddot{G}\ddot{w}\ddot{c}\ \ddot{v}\ddot{w}\ddot{U}\ddot{K}$ (epistatic)
 (c) $\ddot{w}\ddot{j}\ \ddot{v}\ddot{j}$ (lethal)
 (d) $\ddot{K}\ddot{w}\ddot{a}\ddot{t}\ddot{e}\ddot{g}\ddot{U}\ddot{w}\ddot{i}$ (complementary)

30 | $\ddot{w}\ddot{b}\ddot{t}\ddot{g}\ddot{i}\ \ddot{t}\ddot{K}\ddot{v}\ddot{b}\ddot{u}\ \ddot{O}\ddot{v}\ddot{i}\ \ddot{i}\ddot{v}\ddot{B}\ddot{t}\ddot{e}\ddot{v}\ddot{R}\ddot{g}\ \ddot{M}\ddot{w}\ddot{Z}\ ?$ (Ribosome is composed of-)

- (a) $\ddot{w}\ddot{w}\ddot{G}\ddot{b}\ddot{G}\ \ddot{I}\ \ddot{A}\ddot{v}\ddot{i}\ \ddot{G}\ddot{b}\ddot{G}$ (DNA and RNA)

(b) $\ddot{w}\ddot{t}\ddot{v}\ \ddot{v}\ddot{b}\ \ddot{w}\ddot{w}\ddot{G}\ddot{b}\ddot{G}\ \ddot{I}\ \ddot{A}\ddot{v}\ddot{i}\ \ddot{G}\ddot{b}\ddot{G}$ (histone, DNA and RNA)

(c) $\ddot{i}\ \ddot{a}\ddot{y}\ddot{w}\ddot{t}\ddot{v}\ \ddot{v}\ddot{b}$ (only histone)

(d) $\ddot{t}\ddot{c}\ddot{O}\ddot{U}\ddot{b}\ \ddot{I}\ \ddot{A}\ddot{v}\ddot{i}\ \ddot{G}\ddot{b}\ddot{G}$ (protein and RNA)

evsj v (Bangla)

1 | $\ddot{O}\ddot{A}\ddot{v}\ddot{R}\ \ddot{n}\ddot{V}\ddot{r}\ \ddot{A}\ddot{v}\ddot{g}\ddot{v}\ddot{i}\ \ddot{A}\ddot{Z}\ \ddot{S}\ \ddot{w}\ddot{b}\ddot{K}\ddot{t}\ddot{U}\ \ddot{A}\ddot{w}\ddot{Z}\ \ddot{e}\ddot{n}\ddot{r}\ \ddot{G}\ddot{K}\ddot{U}\ddot{v}\ \ddot{b}\ddot{i}\ddot{v}\ddot{t}\ddot{R}\ \ddot{i}\ \ddot{M}\ddot{n}\ddot{Y}\ddot{i}\ \ddot{t}\ \ddot{w}\ddot{L}\ddot{t}\ddot{Z}\ \ddot{c}\ddot{v}\ddot{B}\ddot{j}\ \ddot{v}\ddot{g}\ddot{O}\ \ddot{N}\ddot{t}\ddot{K}\ddot{v}\ \ddot{i}\ \ddot{P}\ddot{b}\ddot{v}\ddot{i}\ \ddot{A}\ddot{S}\ddot{M}\ddot{Z}\ ?$

- (a) $\ddot{`}\ddot{n}\ddot{g}\ddot{S}\ddot{x}$ (b) $\ddot{A}\ddot{a}\ddot{P}\ddot{x}$
 (c) $\ddot{w}\ddot{e}\ddot{j}\ \ddot{v}\ddot{m}\ddot{x}$ (d) $\ddot{K}\ddot{g}\ddot{j}\ \ddot{v}\ddot{K}\ddot{v}\ddot{t}\ddot{S}\ddot{t}\ \ddot{R}\ddot{e}\ddot{v}\ddot{b}\ddot{e}\ddot{w}\ddot{`}$

2 | $\ddot{e}\ddot{v}\ddot{s}\ddot{j}\ \ddot{v}\ \ddot{A}\ddot{w}\ddot{f}\ddot{a}\ddot{v}\ddot{t}\ddot{b}\ \ddot{O}\ddot{q}\ddot{I}\ddot{O}\ \ddot{N}\ \ddot{G}\ddot{i}\ \ddot{A}\ddot{e}\ \ddot{v}\ddot{b}\ \ddot{t}\ddot{K}\ddot{v}\ \ddot{v}\ddot{q}\ ?$

- (a) $\ddot{O}\ddot{L}\ddot{O}\ -\ \ddot{e}\ddot{t}\ddot{Y}\ddot{P}\ \ddot{c}\ddot{t}\ddot{i}$
 (b) $\ddot{O}\ddot{n}\ddot{O}\ -\ \ddot{e}\ddot{t}\ddot{Y}\ddot{P}\ \ddot{c}\ddot{t}\ddot{i}$
 (c) $\ddot{O}\ddot{l}\ddot{O}\ -\ \ddot{e}\ddot{t}\ddot{Y}\ddot{P}\ \ddot{c}\ddot{t}\ddot{i}$
 (d) $\ddot{O}\ddot{K}\ddot{O}\ddot{N}\ddot{e}\ddot{t}\ddot{Y}\ddot{P}\ \ddot{A}\ddot{S}\ddot{M}\ddot{Z}\ \ddot{f}\ddot{y}\ddot{S}\ \ddot{w}\ddot{n}\ddot{t}\ddot{m}\ddot{t}\ddot{e}$

3 | $\ddot{O}\ddot{i}\ \ddot{v}\ \ddot{v}\ \ddot{c}\ddot{h}\ddot{S}\ \ddot{t}\ddot{Z}\ddot{v}\ddot{g}\ddot{v}\ddot{q}\ \ddot{t}\ddot{i}\ \ddot{t}\ddot{L}\ \ddot{A}\ddot{v}\ddot{m}\ddot{e}\ \ddot{w}\ddot{K}\ \ddot{?}\ddot{O}\ \ddot{N}\ \ddot{O}\ddot{e}\ddot{j}\ \ddot{v}\ddot{m}\ddot{x}\ddot{O}\ \ddot{M}\ddot{t}\ddot{i}\ \ddot{K}\ \ddot{w}\ddot{u}\ \ddot{K}\ddot{v}\ \ddot{?}$

- (a) $\ddot{w}\ddot{e}\ddot{j}\ \ddot{v}\ddot{m}\ddot{x}\ddot{i}$ (b) $\ddot{b}\ \ddot{v}\ddot{v}\ddot{o}\ddot{v}\ddot{i}$
 (c) $\ddot{g}\ddot{Z}\ddot{i}\ddot{A}\ddot{t}\ddot{q}\ddot{i}$ (d) $\ddot{A}\ddot{v}\ddot{Z}\ddot{h}\ddot{q}\ddot{v}\ddot{i}$

4 | $\ddot{O}\ddot{t}\ddot{h}\ddot{g}\ddot{b}\ \ddot{K}\ddot{g}\ddot{e}\ddot{t}\ddot{Z}\ddot{g}\ddot{b}\ \ddot{d}\ddot{j}\ \ddot{O}\ \ddot{N}\ \ddot{t}\ddot{i}\ \ddot{L}\ddot{w}\ddot{t}\ddot{Z}\ \ddot{k}\ddot{a}\ddot{w}\ddot{u}\ \ddot{K}\ddot{x}\ \ddot{?}$

- (a) $\ddot{m}\ddot{v}\ddot{t}\ddot{c}\ddot{q}\ \ddot{m}\ddot{e}\ddot{S}\ddot{v}\ddot{g}$ (b) $\ddot{w}\ddot{O}\ddot{i}\ \ddot{w}\ddot{S}$
 (c) $\ddot{w}\ddot{e}\ddot{t}\ddot{k}\ddot{l}\ \ddot{t}\ddot{Y}\ddot{i}\ \ddot{w}\ddot{e}\ddot{t}\ddot{k}\ddot{l}\ \ddot{Y}$ (d) $\ddot{m}\ddot{a}\ddot{U}\ \ddot{c}\ \ddot{`}$

5 | $\ddot{O}\ddot{K}\ddot{e}\ddot{i}\ddot{O}\ \ddot{K}\ddot{w}\ddot{e}\ddot{Z}\ddot{v}\ddot{i}\ \ddot{t}\ddot{O}\ddot{v}\ddot{U}\ \ddot{d}\ddot{z}\ddot{y}\ddot{K}\ddot{Z}\ \ddot{e}\ddot{Q}\ddot{i}\ \ddot{e}\ddot{q}\ddot{t}\ddot{m}\ \ddot{g}\ddot{v}\ddot{i}\ \ddot{v}\ \ddot{h}\ddot{v}\ddot{q}\ \ddot{?}$

- (a) $\ddot{m}\ddot{v}\ddot{Z}$ (b) $\ddot{c}\ddot{w}\ddot{P}$
 (c) $\ddot{t}\ddot{Z}\ddot{i}$ (d) $\ddot{b}\ddot{q}$

6 | $\ddot{O}\ddot{w}\ddot{e}\ddot{e}\ddot{v}\ddot{n}\ \ddot{m}\ddot{a}\ddot{u}\ddot{t}\ddot{K}\ddot{e}\ddot{A}\ddot{v}\ddot{g}\ddot{v}\ddot{i}\ \ddot{g}\ddot{Z}\ \ddot{h}\ddot{v}\ddot{P}\ddot{v}\ddot{B}\ \ddot{K}\ddot{i}\ddot{v}\ \ddot{A}\ddot{b}\ddot{v}\ddot{e}\ddot{k}\ddot{K}\ \ddot{w}\ddot{Q}\ddot{j}\ \ddot{I}\ddot{O}\ \ddot{N}\ \ddot{G}\ddot{w}\ddot{u}\ \ddot{t}\ddot{K}\ddot{v}\ddot{b}\ \ddot{a}\ddot{i}\ \ddot{t}\ddot{b}\ddot{i}\ \ddot{e}\ddot{v}\ddot{K}\ \ddot{?}$

- (a) $\ddot{A}\ddot{w}\ \ddot{e}\ddot{v}\ddot{P}\ddot{K}$ (b) $\ddot{A}\ddot{b}\ddot{y}\ddot{A}\ddot{v}\ \ddot{e}\ddot{v}\ddot{P}\ddot{K}$
 (c) $\ddot{t}\ddot{b}\ddot{w}\ddot{Z}\ddot{e}\ddot{v}\ddot{P}\ddot{K}$ (d) $\ddot{b}\ddot{T}\ \ddot{R}$

7 | $\ddot{t}\ddot{i}\ \ddot{v}\ddot{t}\ddot{K}\ddot{q}\ddot{v}\ \ddot{m}\ddot{v}\ddot{L}\ddot{v}\ddot{l}\ \ddot{q}\ddot{v}\ddot{Z}\ \ddot{t}\ddot{n}\ddot{v}\ddot{t}\ddot{m}\ddot{b}\ \ddot{K}\ddot{w}\ \ddot{Z}\ \ddot{A}\ddot{c}\ddot{w}\ \ddot{e}\ \ddot{m}\ddot{a}\ddot{u}\ddot{m}\ddot{E}\ddot{N}$

- (a) $\ddot{R}\ddot{w}\ddot{g}$ (b) $\ddot{w}\ddot{n}\ \ddot{Z}\ddot{w}\ddot{l}\ \ddot{Z}\ddot{v}$
 (c) $\ddot{M}\ddot{S}\ \ddot{`}$ (d) $\ddot{m}\ddot{v}\ddot{P}\ddot{K}\ddot{g}\ \ddot{e}$

8 | $\ddot{O}\ddot{A}\ddot{v}\ddot{g}\ddot{v}\ddot{i}\ \ddot{c}\ddot{e}\ddot{e}\ddot{v}\ddot{s}\ddot{j}\ \ddot{v}\ddot{O}\ \ddot{K}\ddot{w}\ddot{e}\ddot{Z}\ddot{v}\ddot{q}\ \ddot{c}\ddot{e}\ddot{e}\ddot{v}\ddot{s}\ddot{j}\ \ddot{v}\ddot{i}\ \ddot{t}\ \ddot{n}\ \ddot{w}\ddot{m}\ddot{o}\ \ddot{t}\ddot{h}\ \ddot{b}\ddot{x}\ddot{j}\ \ddot{v}\ddot{a}\ddot{t}\ddot{x}\ddot{Z}\ \ddot{t}\ddot{N}\ddot{i}\ddot{v}\ \ddot{N}\ \ddot{Z}\ddot{v}\ddot{i}\ \ddot{D}\ddot{c}\ddot{g}\ddot{v}\ \ddot{t}\ddot{K}\ddot{v}\ddot{b}\ddot{u}\ \ddot{?}$

- (a) $\ddot{i}\ \ddot{v}\ddot{O}\ddot{v}\ \ddot{D}\ddot{r}\ddot{c}\ddot{j}$ (b) $\ddot{w}\ddot{m}\ddot{o}\ \ddot{Z}\ddot{g}\ddot{v}\ddot{j}$
 (c) $\ddot{A}\ddot{U}\ddot{K}\ddot{v}\ddot{t}\ddot{i}\ \ddot{i}\ \ddot{A}\ddot{b}\ddot{j}\ \ddot{v}\ddot{M}$ (d) $\ddot{c}\ddot{O}\ddot{v}\ddot{p}\ \ddot{w}\ddot{b}\ddot{K}\ddot{A}$

9 | $\ddot{c}\ddot{Y}\ddot{e}\ddot{v}\ddot{t}\ddot{K}\ \ddot{G}\ddot{K}\ddot{w}\ddot{a}\ddot{K}\ \ddot{v}\ddot{a}\ddot{x}\ddot{b}\ \ddot{e}\ddot{v}\ddot{K}\ \ddot{v}\ddot{s}\ddot{t}\ddot{k}\ddot{i}\ \ddot{c}\ddot{t}\ddot{i}\ \ddot{e}\ddot{t}\ddot{m}\ddot{N}$

- (a) $\ddot{t}\ddot{K}\ddot{v}\ddot{j}\ \ddot{b}$ (b) $\ddot{t}\ddot{m}\ddot{g}\ddot{t}\ddot{K}\ddot{v}\ddot{j}\ \ddot{b}$
 (c) $\ddot{n}\ddot{v}\ddot{B}\ddot{t}\ddot{d}\ddot{b}$ (d) $\ddot{W}\ddot{v}\ddot{k}$

- 10 | tKvbwU evsj v ZuxZ cZ`qhy³ kã ?
 (a) i uapx (b) Ni wqg
 (c) fajj vB (d) cvbxq
- 11 | DcmMfj³ kãÑ
 (a) weðvb (b) weRwj
 (c) weÁvb (d) weUc
- 12 | ÔRÁvme Rtb Rtbô Ñ evK`wUj wðj "w³ Kx w` tq MWZ ?
 (a) wetkIY (b) wetkl`
 (c) msL`vevPK kã (d) euePb
- 13 | ÔPv Ô -Gi mgv_ R kãÑ
 (a) fvbj (b) wbkwl_bx
 (c) tKvgj Kvš- (d) i RbxKvš-
- 14 | wbtPi tKvbwU ti vfkqv mvLvl qvZ tnvmtbi Rbt-gZi mij ?
 (a) 1880 Ñ 1947 (b) 1881 Ñ 1933
 (c) 1880 Ñ 1932 (d) 1888 Ñ 1938
- 15 | tKvbwU AbymM³?
 (a) Gi (b) Gti
 (c) Zti (d) ti
- 16 | ÔYÔ-Zj weavb Abymvti wbtPi tKvb evvbb Ai x ?
 (a) ifcvqY (b) MhY
 (c) cjtYv (d) wbjfcY
- 17 | Ôi wî tZ ti s`nq | ÔÑ GB evtK` wktmi Afve ?
 (a) AvKv`fjv (b) thvM`Zv
 (c) Ašq (d) AvmE
- 18 | fvevtP`i D`vniYÑ
 (a) SMov Kiv DvPZ bq |
 (b) cWYe`v cov ntqtQ |
 (c) AtbtKB `i` Lvevi tLtz Pvq bv |
 (d) tPvi UvtK aiv tMj bv |
- 19 | ÔcW_exô ktãi wetkIY Ñ
 (a) RMr (b) wbmM³
 (c) cvw_@ (d) wblLj
- 20 | Avime fvlv t`tk AvMZ kã Ñ
 (a) Avj gwii (b) Avtj vKb
 (c) Avj wcb (d) Avj vgZ
- 21 | Ôr`iô ktãi wecixZ kã Ñ
 (a) R½g (b) avivevwnK
 (c) AveZ³ (d) my`i
- 22 | 'Meteor' -Gi cwi fvlvÑ
 (a) agtKZl (b) a`eZviv
 (c) AvM`Mvj K (d) Dév
- 23 | ÔAvwg G mvfjx PvB bv | Ô Nmij evK`wUj RvUj ifcÑ
 (a) Awg th mvfjx PvB bv Zv bq |
 (b) Awg l G mvfjx PvB bv |
 (c) th-mvfjx G-i Kg ZvtK Awg PvB bv |

- (d) Awg G-i Kg mvfjx PvBtZ cwi bv |
- 24 | tKvbwU thšwMK `faYwb ?
 (a) l (b) H
 (c) D (d) G
- 25 | 'Shakespeare' -bvtgi cZeyfKiYÑ
 (a) tm` wqci (b) tkK&wqci
 (c) tmKkcxqi (d) tkKkucqvi
- 26 | `ZZv ÁvcK wðj "3 kãÑ
 (a) KiKi (b) ZiZi
 (c) gigi (d) mimi
- 27 | ÔUkv fvm` bv _vKtj tKvfbv iPbv fvj Kwj qv tevSv hvq
 bvB | ÔÑPvj Z i wZi evK`wUz fjtj i msL`vÑ
 (a) Pvi (b) cvP
 (c) wZb (d) `ß
- 28 | Kwj gwii `dv vti i evj`Kvtj i cvZvfbv t`vt`+ bvgÑ
 (a) tgv`vteYi Lwj dv (b) mvBclj vLwj dv
 (c) mvBRwí Lwj dv (d) gqRwí Lwj dv
- 29 | 'Do not smile at anybody.' - BstiwR evK`wUj h_vh` evsj vÑ
 (a) KvDtK wbtq i wmkZv Ki te bv |
 (b) KvDtK wbtq gRv Ki te bv |
 (c) KvDtK KUv`fj Ki te bv |
 (d) KvDtK we`fc Ki te bv |
- 30 | Ôkvšô-ktãi mwUwet`Q` Ñ
 (a) kvb&+ Z (b) kvv + 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. Prodip 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 AZŠ-aZ©
(a) He is very intelligent
(b) He is very clever
(c) He is very difficult
(d) He is very sloppy