AIEEE-2007 FINAL EXAMINATION PAPER
CHEMISTRY

1. vfHkfØ;k $A_2 + B_2 \rightleftharpoons 2AB$ e vx rFkk i'p vfHkfØ;kvk d fy; lfØ;.k Åtkvk d eku Øe'k% 180 kJ mol^{-1} rFkk 200 kJ mol^{-1} gA mRijd dh mifLFkfr d dkj.k nkuk vfHkfØ;kvk ¼vx rFkk i'p½ dh lfØ;.k Åtk e 100 kJ mol^{-1} dh deh gk tkrh gA mRijd dh mifLFkfr e vfHkfØ;k ($A_2 + B_2 \rightarrow 2AB$) dh ,UFkYih e ifjoru (kJ mol^{-1} e) gkxk &

(1) 300 (2) 120 (3) 280 (4) 20

Ans. [4]

2. ly, Zn | Zn^2 (1M) || Cu^{2+} (1M) | Cu (E^o_{cell} = 1.10 V) dk 298 K ij i.kr% fujkof'kr fd;k x;kA Cu^{2+}d lki{k Zn^{2+} dh lkanrk $\left(\frac{[Zn^{2+}]}{[Cu^{2+}]}\right)$ g –

(1) Antilog (24.08) (2) 37.3 (3) $10^{37.3}$ (4) 9.65×10^4

Ans. [3]

3. ,d ncy vEy (HA) dk pKa = 4.5. HA d ,d tyh; cQj foy;u dk pOH D;k gkxk ftle vEy 50% vk;fur g ?

(1) 4.5 (2) 2.5 (3) 9.5 (4) 7.0

Ans. [3]

4. vfHkfØ;k 2A + B → mRikn ij fopkj dhft;A ;fn doy B dh lkanrk dk nxuk fd;k tkrk g] rk v}vk; fLFkj jgrh gA tc doy A dh lkanrk dk nxuk fd;k tkrk g] nj nkxuk gk tkrh gA bl vfHkfØ;k d fy; ox fu;rkd dh bdkb g –

(1) L mol^{-1} s^{-1} (2) dkb bdkb ugh (3) mol $L^{-1}s^{-1}$ (4) s^{-1}

Ans. [1]

5. vlR; dFku g :

(1) d-Cykd d rRo ijLij vfu;fer rFkk vfuf'pr jklk;fud x.k inf'kr djr gA

(2) La rFkk Lu d vfrfjDr fdlh Hkh rRo e vkf'kd Hkj g, d vkfcVy ugh ik; tkr gA

(3) fofHkUu yUFkukbMl d jklk;fud x.k vR;f/kd leku gA

(4) 4f rFkk 5f vkfcVyk dk ifjj{k.k iHkko leku gA

Ans. [4]

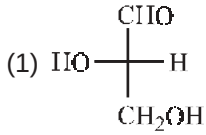
6. fuEu e l fdldh vkd fr ox leryh; g ?

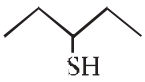
(1) $[CoCl_4]^{2-}$ (2) $[FeCl_4]^{2-}$ (3) $[NiCl_4]^{2-}$ (4) $[PtCl_4]^{2-}$

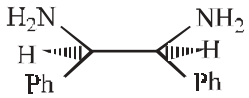
(At. Nos. Co = 27, Ni = 28, Fe = 26, Pt = 78)

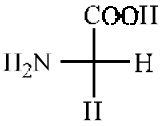
Ans. [4]

7. fuEu esa ls dkSu lk ;kSfxd lerY /koh; idk'k dk /kfor dj ldrk gS ?

(1) 

(2) 

(3) 

(4) 

Ans. [1]

8. ikVhu dh f}rh;d lajpuk dk dkj.k gS –

(1) α-gyhdy e:n.M (2) ty ifjp;h vr%fØ;k,a

(3) α-,ehuks vEyksa dk vuØe (4) ikyhiIVkbM e:n.M dk LFkk;h foU;kl

Ans. [1]

9. fuEu esa ls dkSu&lh vfHkfØ;k lsa 2, 2-Mkbcksekikiu izkIr gksxk ?

(1) $CH_3 - C \equiv CH + 2HBr \rightarrow$ (2) $CH_3CH = CHBr + HBr \rightarrow$

(3) $CH \equiv CH + 2HBr \rightarrow$ (4) $CH_3 - CH = CH_2 + HBr \rightarrow$

Ans. [1]

10. jklk;fud vfHkfØ;k] $CH_3CH_2NH_2 + CHCl_3 + 3KOH \rightarrow (A) + (B) + 3H_2O$ esa ;kSfxd (A) rFkk (B) Øe'k% gS –

(1) C_2H_5CN rFkk 3KCl (2) $CH_3CH_2CONH_2$ rFkk 3KCl

(3) C_2H_5NC rFkk K_2CO_3 (4) C_2H_5NC rFkk 3KCl

Ans. [4]

11. $FeCl_3$ dh mifLFkfr esa Vkybu dh Cl_2 d lkFk vfHkfØ;k djus ij e[;r% izkIr gksrk gS –

(1) cgqrk;y DykjkbM (2) cgqfo DykjkbM

(3) o-rFkk p-DykjkVkybu (4) m-DykjkVkybu

Ans. [3]

12. ,d cgqu fjx esa ukbVªkstu dh mifLFkfr lsa –

(1) fjx byDVku Lugh ifrLFkkiu dh ifr lsd.M gksrh gSa

(2) fjx dh idfr {kkjh; gksrh gSa

(3) fjx ukfHkd Lugh ifrLFkkiu dh ifr fuf"Ø; gksrh gSa

(4) byDVku Lugh ifrLFkkiu dh ifr fuf"Ø; gksrh gSa

Ans. [4]

13. fuEu esa ls dkSu lk vk;uhdj.k esa c/k Øe c< tkrk gS rFkk pEcdh; idfr ifjofrr gksrh gS ?

(1) $C_2 \rightarrow C_2^+$ (2) $NO \rightarrow NO^+$ (3) $O_2 \rightarrow O_2^+$ (4) $N_2 \rightarrow N_2^+$

Ans. [2]

14. lkekU;r% yUFkukbMl dh ryuk e ,fDVukbMl vf/kdkf/kd vkDlhdj.k voLFkk, inf'kr djr gA bldk dkj.k g –

(1) 4f d{kdk dh ryuk e 5f d{kd vf/kd vnj dh vkj gkr g

(2) 4f rFkk 5f d{kdk d e/; mud rjx Qyu d dk.kh; Hkkx e lekurk gkrh g

(3) yUFkukbMl dh ryuk e ,fDVukbMl vf/kd lfØ; gkr g

(4) 4f d{kdk dh ryuk e 5f d{kd ukfHkd l vf/kd njh ij gkr g

Ans. [4]

15. eFku rFkk vkDlhtu d leku n0;ekuk dk 25ºC ij ,d fjDr ik=k e feyk;k tkrk gA vkDlhtu d }kjk vkjkfir dy nkc dk Hkkx g &

(1) $\frac{2}{3}$ (2) $\frac{1}{3}\times\frac{273}{298}$ (3) $\frac{1}{3}$ (4) $\frac{1}{2}$

Ans. [3]

16. ,d inkFk dk 5.25% foy;u] leku foyk;d e ;fj;k ¼ekyj n0;eku = 60 g mol^{-1}) 1.5% foy;u d lkFk leijkljh gA ;fn nkuk foy;uk dk ?kuRo 1.0 gcm^{-3} gk rc inkFk dk vfre n0;eku gkxk –

(1) 90.0g mol^{-1} (2) 115.0g mol^{-1} (3) 105.0g mol^{-1} (4) 210.0 g mol^{-1}

Ans. [4]

17. ;fn ty ok"i dk ,d vkn'k xl eku fy;k tk; rc 1 ckj nkc rFkk 100ºC rki ij 1 eky ty dk ok"iu dju ij vkUrfjd Åtk ifjorru (ΔU) gkxk (fn;k g : 1 ckj rFkk 373 K ij ty d ok"iu dh ekyj ,UFkYih = 41 kJ mol^{-1} rFkk R = 8.3 J $mol^{-1}K^{-1}$)

(1) 4.100 kJ mol^{-1} (2) 3.7904 kJ mol^{-1}

(3) 37.904 kJ mol^{-1} (4) 41.00 kJ mol^{-1}

Ans. [3]

18. vkf'kd :i l foy; icy fo|r vi?kV; $AgIO_3$ (vkf.od n0;eku = 283) d lr Ir foy;u e fuEu lkE; LFkkfir gkrk g –

$$AgIO_{3(s)} \rightleftharpoons Ag^+_{(aq)} + IO_3^-{}_{(aq)}$$

;fn ,d fn; x; rki ij $AgIO_3$ dk foy;rk x.kuQy fLFkjkad $K_{sp} = 1.0 \times 10^{-8}$ rk bld lr Ir foy;u d 100 ml e mifLFkr $AgIO_3$ dk n0;eku g ?

(1) 28.3×10^{-2} g (2) 2.83×10^{-3} g (3) 1.0×10^{-7} g (4) 1.0×10^{-4} g

Ans. [2]

19. ,d jfM;k/keh rRo ,d dej d Q'k ij fxj tkrk gA bldk v} vk;dky 30 fnu gA ;fn ikjfEHkd lfØ;rk vuekfur eku dh nl xuk g rk fdru fnuk d ckn og dej e io'k dju d fy; ljf{kr gkxk ?

(1) 1000 days (2) 300 days (3) 10 days (4) 100 days

Ans. [4]

20. lk;DykgDlu d fuEufyf[kr l:i.kk e l dkulk fdjy g ?

(1) 0;kofrr ukdk (2) n< (3) dlh (4) ukdk

Ans. [1]

21. fuEu e l dkulk SN^2 fØ;k'khyrk dk ?kVrk gvk lgh Øe g ?

(1) $RCH_2X > R_3CX > R_2CHX$ (2) $RCH_2X > R_2CHX > R_3CX$

(3) $R_3CX > R_2CHX > RCH_2X$ (4) $R_2CHX > R_3CX > RCH_2X$

(X = ,d gyktu)

Ans. [2]

22. vfHkfØ;kvk d vuØe, $CH_3CH_2OH \xrightarrow{P+I_2} A \xrightarrow[\text{ईथर}]{Mg} B \xrightarrow{HCHO} C \xrightarrow{H_2O} D$,e ;kfxd 'D' g –

(1) C;Vuy (2) n-C;fVy ,Ydkgky

(3) n-ikfiy ,Ydkgky (4) ikiuy

Ans. [3]

23. fuEu e l dkulk DokUVe l[;kvk dk lePp; ijek.k dh vf/kdre Åtk dk inf'kr djrk g ?

(1) n = 3, l = 1, m = 1, s = +½ (2) n = 3, l = 2, m = 1, s = +½

(3) n = 4, l = 0, m = 0, s = +½ (4) n = 3, l = 0, m = 0, s = +½

Ans. [2]

24. fuEu e dkulk gkbMkt u c/k icyre g ?

(1) O – H ..... N (2) F – H ..... F

(3) O – H ..... O (4) O – H ..... F

Ans. [2]

25. vfHkfØ;k,

$2Al_{(s)} + 6HCl_{(aq)} \rightarrow 2Al^{3+}_{(aq)} + 6Cl^{-}_{(aq)} + 3H_2(g)$ e &

(1) ifr 3L $H_2(g)$ d mRiknu d fy, 6L $HCl_{(aq)}$ i;Dr gkrk g

(2) rki ,o nkc dh mnkklhurk e Al d iR;d eky dh fØ;k l 33.6 L $H_{2(g)}$ mRiUu gkrh g

(3) ekud rki rFkk nkc ij Al d iR;d eky dh fØ;k l 67.2 L $H_{2(g)}$ mRiUu gkrh g

(4) $HCl_{(aq)}$ d iR;d eky dh [kir l ekud rki rFkk nkc ij 11.2 L $H_{2(g)}$ mRiUu gkrh g

Ans. [4]

26. fdl mojd d fu;fer mi;kx l feVVh dh vEyh;rk c< tkrh g ?

(1) ikVf'k;e ukbVV (2) ;fj;k

(3) pu dk lijQkLQV (4) vekfu;e lYQV

Ans. [4]

27. ,d Lor% iØe d fy, lgh dFku igpkfu, :

(1) Lor% iØe d fy, ,d foyfxr r=k e ,UVkih e ifjoru /kukRed gkrk gA

(2) Å"ek'kk"kh iØe dHkh Lor% ugh gkr gA

(3) Å"ek{kih iØe ge'kk Lor% gkr gA

(4) vfHkfØ;k iØe e Åtk e deh Lor%rk d fy; ,d ek=k iek.k gA

Ans. [1]

28. fuEu esa l dkulh ukfHkdh; vfHkfØ;k ,d leLFkkfud mRiUu djxh ?

(1) U;Vku d.k mRlrtu (2) ikthVku mRlrtu

(3) α-d.k mRlrtu (4) β-d.k mRlrtu

Ans. [1]

29. 25ºC rki vkj vur rurk ij nk icy fo|r vi?kV;k dh H_2O esa (tgk vk;u foy;u esa Lor=k xfr djrs g) rY;kdh pkydrk, uhp nh xbZ g :

$\Lambda^\circ_{CH_3COONa}$ = 91.0 S cm²/equiv

Λ°_{HCl} = 426.2 S cm²/equiv

,lhfVd vEy d tyh; foy;u dh Λº ifjdfyr dju d fy, dku lh vfrfjDr tkudkjh@ ek=kk vko';d g ?

(1) NaCl dk Λº

(2) CH_3COOH dk Λº

(3) $H^+(\lambda^\circ_{H^+})$ dh lhekr rY;kdh pkydrk

(4) Dykjk,lhfVd vEy ($ClCH_2COOH$) dk Λº

Ans. [1]

30. fuEu esa l dkulk tyh; foy;u esa icyre {kkj g ?

(1) VkbefFky,ehu (2) ,uhyhu

(3) MkbefFky,ehu (4) efFky,ehu

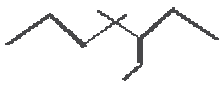
Ans. [3]

31. ,fFky cUthu d $KMnO_4$ l vkDlhdj.k }kjk ifj.kke d :i esa ikIr gku okyk ;kfxd g –

(1) cUtkQhuku (2) ,lhVkQhuku

(3) cUtkbd vEy (4) cfUty ,Ydkgky

Ans. [3]

32. 

dk IUPAC uke g –

(1) 1, 1-Mkb,fFky-2-MkbefFkyiUVu (2) 4, 4-MkbefFky-5, 5-Mkb,fFky iUVu

(3) 5, 5-Mkb,fFky-4, 4-MkbefFkyiUVu (4) 3-,fFky-4, 4-MkbefFkyiUVu

Ans. [4]

33. fuEu esa dkulh Lih'kht ifrpEcdh; 0;ogkj inf'kr djrh g ?

(1) O_2^{2-} (2) O_2^+ (3) O_2 (4) NO

Ans. [1]

34. Si, Ge, Sn vkj Pb d MkbgykbMk d LFkkf;Ro dk c<rk gvk Øe g &
(1) $GeX_2 \leqslant SiX_2 \leqslant SnX_2 \leqslant PbX_2$ (2) $SiX_2 \leqslant GeX_2 \leqslant PbX_2 \leqslant SnX_2$
(3) $SiX_2 \leqslant GeX_2 \leqslant SnX_2 \leqslant PbX_2$ (4) $PbX_2 \leqslant SnX_2 \leqslant GeX_2 \leqslant SiX_2$
Ans. [3]

35. fuEu e l vlR; dFku igpkfu, –
(1) vkt tku SO_2 d lkFk vfHkfØ;k djd SO_3 nrk gA
(2) ok; dh mifLFkfr e flfydku NaOH(tyh;) d lkFk vfHkfØ;k djd Na_2SiO_3 o H_2O nrk gA
(3) Cl_2 vekfu;k d vkf/kD; d lkFk vfHkfØ;k djd N_2 rFkk HCl nrk gA
(4) Br_2 xe o icy NaOH foy;u d lkFk vfHkfØ;k djd NaBr, $NaBrO_4$ o H_2O nrk gA
Ans. [4]

36. ,d /kuk;u dk vko'k@vkdkj vuikr bldh /ko.k {kerk dk fu/kkfjr djrk gA fuEu e l dkulk vuØe /kuk;uk K^+, Ca^{2+}, Mg^{2+} rFkk Be^{2+} dh /ko.k {kerk d c<r Øe dk inf'kr djrk g ?
(1) $Mg^{2+} < Be^{2+} < K^+ < Ca^{2+}$ (2) $Be^{2+} < K^+ < Ca^{2+} < Mg^{2+}$
(3) $K^+ < Ca^{2+} < Mg^{2+} < Be^{2+}$ (4) $Ca^{2+} < Mg^{2+} < Be^{2+} < K^+$
Ans. [3]

37. lY¶;fjd vEy d 3.60 M foy;u ftldh ¼ekyj n0;eku = 98 g mol^{-1}) n0;eku ifr'krrk 29% g] H_2SO_4 dk ?kuRo (g mL^{-1} e) gkxk –
(1) 1.64 (2) 1.88 (3) 1.22 (4) 1.45
Ans. [3]

38. ,d vEy H_2A d iFke rFkk f}rh; fo;kt u fLFkjkd Øe'k% 1.0×10^{-5} rFkk 5.0×10^{-10} gA ifj.kkeh fo;kt u fLFkjkd gkxk –
(1) 5.0×10^{-5} (2) 5.0×10^{15} (3) 5.0×10^{-15} (4) 0.2×10^{5}
Ans. [3]

39. ,fFky ,Ydkgky rFkk ikfiy ,Ydkgky d ,d feJ.k dk 300 K ij ok"i nkc 290 mm gA ikfiy ,Ydkgky dk ok"i nkc 200 mm gA ;fn ,fFky ,Ydkgky dk eky iHkkt 0.6 g] rk mlh rki ij bldk ok"i nkc (mm e) gkxk –
(1) 350 (2) 300 (3) 700 (4) 360
Ans. [1]

40. pu d iRFkj dk pu e :ikUrj.k] $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$ d nkjku ΔH^o rFkk ΔS^o d eku 298 K rFkk 1 ckj ij Øe'k% + 179.1 kJ mol^{-1} rFkk 160.2 J/K gA ;fn ΔH^o rFkk ΔS^o rki ij fuHkj ugh djr gk] rk fdl rki l vf/kd rki ij mijkDr iØe Lor% gkxk –
(1) 1008 K (2) 1200 K (3) 845 K (4) 1118 K
Ans. [4]

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41. /kukRed ink dh ,d x.kkUkj J.kh e] iR;d in] vxy nk ink d ;kx d cjkcj g] rc J.kh dk lkovuikr gkxk-

(1) $\frac{1}{2}$ $(1-\sqrt{5})$ (2) $\frac{1}{2}\sqrt{5}$ (3) $\frac{1}{2}$ $\sqrt{5}$ (4) $\frac{1}{2}$ $(\sqrt{5}-1)$

mUkj. **[4]**

42. ;fn $\sin^{-1}\left(\frac{x}{5}\right)+\text{cosec}^{-1}\left(\frac{5}{4}\right)=\frac{\pi}{2}$ rc x dk eku g-

(1) 1 (2) 3 (3) 4 (4) 5

mUkj. **[2]**

43. $(a-b)^n$, $n \geq 5$ d f}in izlkj e] 5^{o} rFkk 6^{o} ink dk ;kx 0 g] rc $\frac{a}{b}$ cjkcj g-

(1) $\frac{5}{n-4}$ (2) $\frac{6}{n-5}$ (3) $\frac{n-5}{6}$ (4) $\frac{n-4}{5}$

mUkj. **[4]**

44. lePp; S : {1, 2, 3, ..., 12} dk rhu leku vkdkj d lePp; A, B rFkk C e bl idkj foHkkftr fd;k tkuk g fd $A \cup B \cup C = S$, $A \cap B = B \cap C = A \cap C = \phi$. lePp; S dk foHkkftr dju d rjhdk dh l[;k g-

(1) $12!/3!(4!)^3$ (2) $12!/3!(3!)^4$ (3) $12!/(4!)^3$ (4) $12!/(3!)^4$

mUkj. **[3]**

45. $\left(\frac{-\pi}{2},\frac{\pi}{2}\right)$ d e/; fLFkr og vf/kdre vUrjky] ftld fy; Qyu $\left[f(x)=4^{-x^2}+\cos^{-1}\left(\frac{x}{2}-1\right)+\log(\cos x)\right]$ ifjHkkf"kr g] gkxk -

(1) $[0, \pi]$ (2) $\left(\frac{-\pi}{2},\frac{\pi}{2}\right)$ (3) $\left[-\frac{\pi}{4},\frac{\pi}{2}\right)$ (4) $\left[0,\frac{\pi}{2}\right)$

mUkj. **[4]**

46. 13 kg n0;eku dk fi.M 5 m rFkk 12 m yEch nk Mkfj;k l yVdk;k x;k g] ftud nlj flj] 13 m yEch NM d fljk l c/k gA ;fn NM bl idkj j[kh tk; fd fi.M mld e/; fcUn d Bhd uhp yVd] rk Mkfj;k e ruko g -

(1) 12 kg rFkk 13 kg (2) 5 kg rFkk 5 kg

(3) 5 kg rFkk 12 kg (4) 5 kg rFkk 13 kg

mUkj. **[3]**

47. ,d fu"i{kikrh ikl dk] LorU=k :i l rhu ckj Qdk tkrk g dy nk ckj 9 vkus dh ikf;drk gkxh-

(1) 1/729 (2) 8/9 (3) 8/729 (4) 8/243

mUkj. **[4]**

48. ekuk fd oUk fudk; tk (–1, 1) l xtjr g rFkk x-v{k ij Li'k djr gA ;fn (h, k) oUk d dUn dh dkfV gk] rk k d ekuk d lePp; dk vUrjky -

(1) $0 < k < 1/2$ (2) $k \geq 1/2$ (3) $-1/2 \leq k \leq 1/2$ (4) $k \leq ½$

mUkj. **[2]**

49. ekuk L j[kk lery 2x + 3y + z = 1 rFkk x + 3y + 2z = 2 dk ifrPNn djrh gA ;fn L /kukRed x-v{k d lkFk α dk.k cukrh g rk cos α cjkcj g-

(1) $1/\sqrt{3}$ (2) 1/2 (3) 1 (4) $1/\sqrt{2}$

mÙkj. **[1]**

50. ey fcUn l xtju oky rFkk x-v{k ij dUn oky lHkh o Ùkk dk vody lehdj.k gkxk-

(1) $x^2 = y^2 + xy\frac{dy}{dx}$ (2) $x^2 = y^2 + 3xy\frac{dy}{dx}$

(3) $y^2 = x^2 + 2xy\frac{dy}{dx}$ (4) $y^2 = x^2 - 2xy\frac{dy}{dx}$

mÙkj. **[3]**

51. ;fn p rFkk q bl idkj l /kukRed okLrfod l[;k g fd $p^2 + q^2 = 1$, rc (p + q) dk vf/kdre eku gkxk-

(1) 2 (2) $\frac{1}{2}$ (3) $\frac{1}{\sqrt{2}}$ (4) $\sqrt{2}$

mÙkj. **[4]**

52. ,d ehukj] o Ùkkdkj ikd d e/; e fLFkr gA A rFkk B ikd d fdukj ij nk fcUn bl idkj g fd AB (= a), ehukj d ikn l 60º dk dk.k vkUrfjr djr g rFkk fcUn A ;k B l ehukj d 'kh"k ij mUu;u dk.k 30º g] rk ehukj dh Åpkbl gkxk-

(1) $2a/\sqrt{3}$ (2) $2a\sqrt{3}$ (3) $a/\sqrt{3}$ (4) $a\sqrt{3}$

mÙkj. **[3]**

53. J.kh] $^{20}C_0 - {}^{20}C_1 + {}^{20}C_2 - {}^{20}C_3 + \ldots\ldots - \ldots\ldots + {}^{20}C_{10}$ dk ;kx g-

(1) $-{}^{20}C_{10}$ (2) $\frac{1}{2}{}^{20}C_{10}$ (3) 0 (4) $^{20}C_{10}$

mÙkj. **[2]**

54. oØ d fcUn P(x, y) ij vfHkyEc] x-v{k ij G ij feyrk gA ;fn G dh ey fcUn l njh] P d Hkt l nxuh gk] rk oØ gkxk -

(1) nh?ko Ùk (2) ijoy; (3) oÙk (4) vfrijoy;

mÙkj. **[4]**

55. ;fn $|z + 4| \le 3$, rc $|z + 1|$ dk vf/kdre eku g-

(1) 4 (2) 10 (3) 6 (4) 0

mÙkj. **[3]**

56. nk cy P N rFkk 3 N dk ifj.kkeh cy 7 N gA ;fn 3 N cy dh fn'kk foifjr dj nh tk; rk ifj.kkeh $\sqrt{19}$ N gk tkrk gA P dk eku gkxk-

(1) 5 N (2) 6 N (3) 3 N (4) 4 N

mÙkj. **[1]**

57. nk gokb tgkt I rFkk II fu'kku ij yxkrkj ce Qdr gA I rFkk II }kjk lgh fu'kkuk yxku dh ikf;drk Øe'k% 0.3 rFkk 0.2 g] nljk gokb tgkt rHkh ce Mkyrk g tc igyk tgkt] fu'kkuk pdrk gA nlj tgkt }kjk fu'kkuk yxku dh ikf;drk g-

(1) 0.06 (2) 0.14 (3) 0.2 (4) 0.7

mÙkj. **[2]**

58. ;fn $D = \begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix}$ $x \neq 0, y \neq 0$ rc D =

(1) x rFkk y nkuk l foHkkT; ugh g (2) x rFkk y nkuk l foHkkT; g

(3) x l foHkkT; ij y l foHkkT; ugh g (4) y l foHkkT; ij x l foHkkT; ugh g

mÙkj. **[2]**

59. vfrijoy; $\frac{x^2}{\cos^2\alpha} - \frac{y^2}{\sin^2\alpha} = 1$, α d ifjofrr gku ij] fuEu e l dkulk fLFkj jgxk ?

(1) mRdUnrk (2) fu;rk

(3) 'kh"k d Hkt (4) ukfHk d Hkt

mÙkj. **[4]**

60. ;fn ,d j[kk iR;d x-v{k rFkk y-v{k dh /kukRed fn'kk d lkFk $\frac{\pi}{4}$ dk dk.k cukrh g] rc og dk.k] tk j[kk] z-v{k dh /kukRed fn'kk d lkFk cuk;xh] gkxk-

(1) $\pi/6$ (2) $\pi/3$ (3) $\pi/4$ (4) $\pi/2$

mÙkj. **[4]**

61. C dk og eku ftld fy; vUrjky [1, 3] e Qyu f(x) = $\log_e x$ d fy; ek/;eku ie; lR; g-

(1) $2\log_3 e$ (2) $\frac{1}{2}\log_e 3$ (3) $\log_3 e$ (4) $\log_e 3$

mÙkj. **[1]**

62. Qyu $f(x) = \tan^{-1}(\sin x + \cos x)$, ftl vUrjky e o/keku Qyu g og g-

(1) $(\pi/4, \pi/2)$ (2) $(-\pi/2, \pi/4)$

(3) $(0, \pi/2)$ (4) $(-\pi/2, \pi/2)$

mÙkj. **[2]**

63. ekuk $A = \begin{bmatrix} 5 & 5\alpha & \alpha \\ 0 & \alpha & 5\alpha \\ 0 & 0 & 5 \end{bmatrix}$, ;fn $|A^2| = 25$, rc $|\alpha|$ dk eku g-

(1) 5^2 (2) 1 (3) $\frac{1}{5}$ (4) 5

mÙkj. **[3]**

64. J.kh $\frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} \ldots\ldots \infty$ dk ;kx g-

(1) e^{-2} (2) e^{-1} (3) $e^{-\frac{1}{2}}$ (4) $e^{+\frac{1}{2}}$

mÙkj. **[2]**

65. ;fn $\hat{u}$ rFkk $\hat{v}$ bdkbZ lfn'k g rFkk θ mud e/; U;wu dk.k g rc $2\hat{u} \times 3\hat{v}$ ftud fy; bdkbZ lfn'k g -

(1) θ d Bhd nk ekuk d fy;

(2) θ d nk ekuk l T;knk d fy;

(3) θ d fdlh eku d fy; ugh

(4) θ d Bhd ,d eku d fy;

mÙkj. **[4]**

66. ,d d.k] ,d b Åpkb rFkk a njh ij fLFkr nhokj d Bhd Åij l fudyrk g] rFkk enku ij i{kI; fcUn l c njh ij fxjrk g rk i{kI; dk.k g -

(1) $\tan^{-1}\frac{b}{ac}$ (2) 45° (3) $\tan^{-1}\frac{bc}{a(c-a)}$ (4) $\tan^{-1}\frac{bc}{a}$

mÙkj. **[3]**

67. ,d d{kk d Nk=kk d vdk dk vkl r 52 rFkk Nk=kkvk d vdk dk vkl r 42 gA Nk=kk rFkk Nk=kkvk d l;Dr vdk dk vkl r 50 gA d{kk e Nk=kk dk ifr'kr gkxk -

(1) 40 (2) 20 (3) 80 (4) 60

mÙkj. **[3]**

68. ijoy; $y^2 = 8x$ ij Li'k j[kk dk lehdj.k $y = x + 2$ g] bl j[kk ij og fcUn ft l l ijoy; ij [khph xb vU; Li'k j[kk] nh xb Li'k j[kk d yEcor gk -

(1) (–1, 1) (2) (0, 2) (3) (2, 4) (4) (–2, 0)

mÙkj. **[4]**

69. ;fn (2, 3, 5) xkyk $x^2 + y^2 + z^2 – 6x – 12y – 2z + 20 = 0$, d 0;kl d ,d flj gk] rc 0;kl d nlj flj d fun'kkd gkx-

(1) (4, 9, –3) (2) (4, –3, 3) (3) (4, 3, 5) (4) (4, 3, –3)

mÙkj. **[1]**

70. ekuk $\bar{a} = \hat{i} + \hat{j} + \hat{k}$, $\bar{b} = \hat{i} - \hat{j} + 2\hat{k}$ rFkk $\bar{c} = x\hat{i} + (x-2)\hat{j} - \hat{k}$;fn lfn'k $\bar{c}$, $\bar{a}$ rFkk $\bar{b}$ d lery e fLFkr gk rc x cjkcj g -

(1) 0 (2) 1 (3) –4 (4) –2

mÙkj. **[4]**

71. ekuk A (h, k), B (1, 1) rFkk C (2, 1) ,d ledk.k f=kHkt d 'kh"k g ft le AC d.k g] ;fn f=kHkt dk {k=kQy 1 g] rc 'k' }kjk fy; x; ekuk dk lePp;] fn;k tkrk g-

(1) {1, 3} (2) {0, 2} (3) {–1, 3} (4) {–3, –2}

mÙkj. **[3]**

72. ekuk P (–1, 0) Q = (0, 0) rFkk R (3, $3\sqrt{3}$) rhu fcUn g] dk.k PQR d v/kd dk lehdj.k g-

(1) $\sqrt{3}x + y = 0$ (2) $x + \frac{\sqrt{3}}{2}y = 0$

(3) $\frac{\sqrt{3}}{2}x + y = 0$ (4) $x + \sqrt{3}y = 0$

mÙkj. **[1]**

73. ;fn $my^2 + (1– m^2) xy – mx^2 = 0$ dh ,d j[kk j[kkvk $xy = 0$ d e/; dk.k dh v/kd gk] rc m g -

(1) $-\frac{1}{2}$ (2) –2 (3) 1 (4) 2

mÙkj. **[3]**

74. ekuk $F(x) = f(x) + f\left(\frac{1}{x}\right)$, tgk $f(x)=\int_1^x \frac{\log t}{1+t}dt$ rc F(e) dk eku g

(1) $\frac{1}{2}$ (2) 0 (3) 1 (4) 2

mÙkj. **[1]**

75. ekuk $f : R \to R$,d Qyu g tks $f(x) = Min \{x + 1, |x| + 1\}$ l ifjHkkf"kr g] rc fuEu e l dkulk lgh g ?

(1) $f(x) \geq 1$ lHkh $x \in R$ d fy; (2) $f(x)$, $x = 1$ ij vodyuh; ugh g

(3) $f(x)$, iR;d fcUnq ij vodyuh; g (4) $f(x)$, $x = 0$ ij vodyuh; ugh g

mÙkj. **[3]**

76. Qyu $f : R\{0\} \to R$, $f(x)=\frac{1}{x}-\frac{2}{e^{2x}-1}$ dk x = 0 ij lrr cuk;k tk ldrk g] $f(0)$ dk eku gkxk-

(1) 2 (2) –1 (3) 0 (4) 1

mÙkj. **[4]**

77. leh dj.k $\int_{\sqrt{2}}^{x} \frac{dt}{t\sqrt{t^2-1}} = \frac{\pi}{2}$ e x dk eku gkxk -

(1) 2 (2) π (3) $\sqrt{3}/2$ (4) $2\sqrt{2}$

mÙkj. **[B]**

78. $\int \frac{dx}{\cos x+\sqrt{3}\sin x}$ dk eku g

(1) $\frac{1}{2}\log\tan\left(\frac{x}{2}+\frac{\pi}{12}\right)+C$ (2) $\frac{1}{2}\log\tan\left(\frac{x}{2}-\frac{\pi}{12}\right)+C$

(3) $\log\tan\left(\frac{x}{2}+\frac{\pi}{12}\right)+C$ (4) $\log\tan\left(\frac{x}{2}-\frac{\pi}{12}\right)+C$

mÙkj. **[1]**

79. oØ $y^2 = x$ rFkk $y = |x|$ }kjk ifjcð {k=kQy g

(1) $\frac{2}{3}$ (2) 1 (3) $\frac{1}{6}$ (4) $\frac{1}{3}$

mÙkj. **[3]**

80. ;fn leh dj.k $x^2 + ax + 1 = 0$ d eyk dk vUrj $\sqrt{5}$ l de g] rc a d lHko ekuk dk lePp; g

(1) (–3, 3) (2) (–3, ∞) (3) (3, ∞) (4) (– ∞, – 3)

mÙkj. **[1]**

81. fLix l tM g, fi.M dk foLFkkiu o ljy vkoÙk xfr $x = 2 \times 10^{-2} \cos \pi t$ ehVj }kjk nh tkrh gA og le; ftl ij iFke ckj vf/kdre pky gkrh g&

(1) 0.5 s (2) 0.75 s (3) 0.125 s (4) 0.25 s

Ans : [1]

82. A.C. ifjiFk e] vkjkfir foHkokUrj $E = E_0 \sin\omega t$ gA ifjiFk e] ifj.kkeh fo|r /kkjk $I = I_0 \sin\left(\omega t - \frac{\pi}{2}\right)$. gA ifjiFk e 0;f;r 'kfDr nh tkrh g&

(1) $P = \frac{E_0 I_0}{\sqrt{2}}$ (2) P = zero (3) $P = \frac{E_0 I_0}{2}$ (4) $P = \sqrt{2}\ E_0 I_0$

Ans : [2]

83. X-Y fun'k r=k e] ,d fo|r vko'k 10^{-3} μC ey fcUn (0,0) ij j[kk x;k gA nk fcUn A o B Øe'k% $(\sqrt{2}, \sqrt{2})$ o (2, 0) ij fLFkr gA fcUnvk A o B d e/; foHkokUrj gkxk&

(1) 9 volt (2) zero (3) 2 volt (4) 4.5 volt

Ans : [2]

84. lekUrj lyV l?kkfj=k dk ,d cVjh l vkof'kr fd;k tkrk g] tc rd lyVk d e/; foHkokUrj] cVjh d fo-ok-cy d leku u gk tk;A l/kkfj=k e lfpr Åtk o cVjh }kjk fd; x;s dk; dk vuikr gkxk&

(1) 1 (2) 2 (3) $\frac{1}{4}$ (4) $\frac{1}{2}$

Ans : [4]

85. 10H dh ,d vkn'k d.Myh J.khØe e ifrjk/k 5Ω o 5V dh cVjh l tkMh tkrh gA ifjiFk i.k dju d 2 sec d ckn] ifjiFk e cgu okyh /kkjk g ¼,fEi;j e½&

(1) (1 – e) (2) e (3) e^{-1} (4) $(1 - e^{-1})$

Ans : [4]

86. 'a' f=kT;k d ,d lh/k yEc rkj e fu;r fo|r /kkjk icg jgh gA fo|r /kkjk bld vuiLFk dkV {k=kQy ij ,d leku :i l forfjr gA $\frac{a}{2}$ o 2 a ij pEcdh; {k=k dk vuikr g&

(1) $\frac{1}{4}$ (2) 4 (3) 1 (4) $\frac{1}{2}$

Ans : [3]

87. fo|r /kkjk I ,d vUrghu yEc] lh/k iry ikbi e iokfgr gkrh gA rk&

(1) pEcdh; {k=k doy ikbi d v{k ij 'kU; g

(2) pEcdh; {k=k] ikbi e fofHkUu fcUnvk ij vyx&vyx g

(3) pEcdh; {k=k] ikbi e fdlh fcUn ij 'kU; g

(4) pEcdh; {k=k ikbi e lHkh fcUnvk ij leku g] yfdu 'kU; ugh g

Ans : [3]

88. ;fn M_0 ,d vkDlhtu leLFkkfud $_8O^{17}$ dk n0;eku g] Mp o M_N Øe'k% ikVku o U;Vku d n0;eku g] leLFkkfud dh ukfHkdh; c/ku Åtk g&

(1) $(M_0 - 8M_P)\ C^2$ (2) $(M_0 - 8M_P - 9M_N)\ C^2$

(3) M_0C^2 (4) $(M_0 - 17\ M_N)\ C^2$

Ans : [2]

89. ukfHkd l xkek&fdj.kk d mRl tu e

(1) nkuk U;Vku l[;k o ikVku l[;k ifjofrr gkrh g

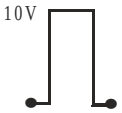
(2) U;Vku l[;k o ikVku l[;k e ifjoru ugh gkrk g

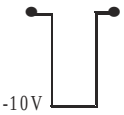
(3) doy U;Vku l[;k ifjofrr gkrh g

(4) doy ikVku l[;k ifjofrr gkrh g

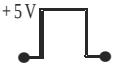
Ans : [2]

90. fp=kkulkj ;fn p-n lf/k Mk;kM e] 10V dk ,d ox fuo'kh ldr vkjkfir fd;k tkrk g] rk R_L ij fuxr ldr gkxk&

(1) 

(2) 

(3) 

(4) 

Ans : [4]

91. vkofUk *v* dk QkVku mlls lEcfU/kr lox j[krk gA ;fn c idk'k dk ox g] rk lox g&

(1) *v* /c (2) h *v* c (3) h *v* /c^2 (4) h *v* /c

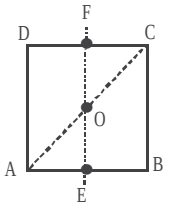
Ans : [4]

92. d.k dk ox $v = v_0 + gt + ft^2$ gA ;fn t = 0 ij bldh fLFkfr x = 0 g] rk ,dkd le; (t = 1) d ckn bldk foLFkkiu g&

(1) $v_0 + 2g + 3f$ (2) $v_0 + g/2 + f/3$ (3) $v_0 + g + f$ (4) $v_0 + g/2 + f$

Ans : [2]

93. fn; x; ,d leku oxkdkj ry ABCD d fy;] ftldk dUn O g



(1) $\sqrt{2}\, I_{AC} = I_{EF}$ (2) $I_{AD} = 3I_{EF}$ (3) $I_{AC} = I_{EF}$ (4) $I_{AC} = \sqrt{2}\ I_{EF}$

Ans : [3]

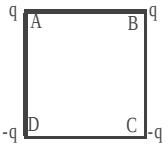
94. ,d fcUn n0;eku $x = x_0 \cos(\omega t - \pi/4)$ fu;e d vuqkj x-v{k d vufn'k nkyu xfr djrk gA ;fn d.k dk Roj.k $a = A\cos(\omega t + \delta)$ l fy[kk tkrk g] rk&

(1) $A = x_0$, $\delta = -\frac{\pi}{4}$ (2) $A = x_0\ \omega^2$, $\delta = \frac{\pi}{4}$

(3) $A = x_0\ \omega^2$, $\delta = -\frac{\pi}{4}$ (4) $A = x_0\ \omega^2$, $\delta = \frac{3\pi}{4}$

Ans : [4]

95. fp=kku lkj] ox d 'kh"kk ij vko'k fLFkr gA ekuk fd dUn ij $\vec{E}$ fo|r {k=k o V foHko gA ;fn A rFkk B ij vko'kk dk Øe'k D o C ij vko'kk l vUrj ifjofrr fd;k tkrk g] rk



(1) $\vec{E}$ vifjofrr jgxk] V ifjofrr gkxk (2) nkuk $\vec{E}$ o V ifjofrr gkx

(3) $\vec{E}$ o V vifjofrr jgx (4) $\vec{E}$ ifjofrr gkxk] V vifjofrr jgxkA

Ans : [4]

96. jfM;k ,fDVo rRo X dk v/k&vk; dky] ,d nlj jfM;k,fDVo rRo Y d ek/;&vk; le; d leku gA ikjEHk e] o leku l[;k e ijek.k j[kr gA rk&

(1) X, Y dh ryuk e vf/kd nj l {kf;r gkxk

(2) Y, X dh ryuk e vf/kd nj l {kf;r gkxk

(3) ikjEHk e] X o Y leku {kf;r nj j[kr g

(4) X o Y lno leku {kf;r nj j[kr g

Ans : [2]

97. n{krk η = 1/10 d Å"ek bftu tlk dkjukV bftu jÝhtjVj d :i e mi;kx fd;k tkrk gA ;fn fudk; ij fd;k x;k dk; 10 J g] de rkieku ij] L=kkr l vo'kkf"kr Åtk dh ek=kk g&

(1) 99 J (2) 90 J (3) 1 J (4) 100 J

Ans : [2]

98. iR;d dkcu] flfydu o tefu;e pkj l;kth byDVku j[kr gA dej d rkieku ij] uhp fn;s x; dFkuk e l dkulk lokf/kd mi;Dr g&&

(1) C e eDr pkyu byDVkuk dh l[;k i;kIr g yfdu Si o Ge e de g

(2) lHkh rhuk e] eDr pkyu byDVkuk dh l[;k ux.; g

(3) lHkh rhuk e] pkyu d fy, eDr byDVkuk dh l[;k i;kIr g

(4) doy Si o Ge e pkyu d fy, eDr byDVkuk dh l[;k i;kIr g] yfdu C e de g

Ans : [4]

99. fu;r] ,d leku o ijLij yEcor {k=kk $\vec{E}$ o $\vec{B}$ e] $\vec{E}$ o $\vec{B}$ nkuk d yEcor ox $\vec{v}$ l ,d q vko'k dk vkof'kr d.k io'k djrk gA vkj ox $\vec{v}$ d ifjek.k o fn'kk e fcuk fdlh ifjoru d ckgj fudyrk g rk&

(1) $\vec{v} = \vec{E} \times \vec{B} / B^2$ (2) $\vec{v} = \vec{B} \times \vec{E} / B^2$

(3) $\vec{v} = \vec{E} \times \vec{B} / E^2$ (4) $\vec{v} = \vec{B} \times \vec{E} / E^2$

Ans : [1]

100. x-v{k ij fLFkr dN ifjoruk d dkj.k fcUnq x (μm e) ij foHko V (x) = 20 /(x^2- 4) volt }kjk fn;k tkrk gA x = 4 μm ij fo|r {k=k E fn;k tkrk g

(1) 5/3 Volt/μm vkj –ve x fn'kk e (2) 5/3 Volt/μm vkj +ve x fn'kk e

(3) 10/9 Volt/μm vkj -ve x fn'kk e (4) 10/9 Volt/μm vkj +ve x fn'kk e

Ans : [4]

101. gkbMkt u ijek.k e] fuEu e l dkulk lØe.k mPpre vko fÙk dk QkVku ÅRlftr djrk g\

(1) n = 2 to n = 6 (2) n = 6 to n = 2

(3) n = 2 to n =1 (4) n = 1 to n = 2

Ans : [3]

102. fLix fu;rkd 'k' dh fLix ¼n0;ekughu½ }kjk 'm' n0;eku dk Cykd o 'M' n0;eku dk Cykd tkMk tkrk gA Cykdk dk ?k"k.kghu {kfrt Vcy ij j[kk tkrk gA ikjEHk e Cykd fLFkj g o fLix vfoLrkfjr gA rk ,d fu;r cy 'F', 'M' n0;eku d Cykd dk [kpu e vkjkfir fd;k tkrk gA 'm' n0;eku d Cykd ij cy Kkr djk&

(1) $\frac{mF}{M}$ (2) $\frac{(M+m)F}{m}$ (3) $\frac{mF}{(m+M)}$ (4) $\frac{MF}{(m+M)}$

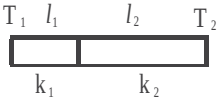
Ans : [3]

103. -15D o +5D 'kfDr d nk yl ,d&nlj d lEid e gA l;ktu dh Qkdl njh g&

(1) – 20 cm (2) –10 cm (3) +20cm (4) +10 cm

Ans : [2]

104. rkih; dpkyd NM dk ,d fljk rkieku T_1 o nljk fljk rkieku T_2 ij j[kk tkrk gA NM yEckb l_1 o l_2 o Øe'k% rkih; pkydrk k_1 o k_2 d nk Hkkxk l cuh gA nkuk Hkkxk d lEid lrg dk rkieku g&



(1) $(k_2 / _2 T_1 + k_1 / _1 T_2) / (k_1 / _1 + k_2 / _2)$ (2) $(k_2 / _1 T_1 + k_1 / _2 T_2) / (k_2 / _1 + k_1 / _2)$

(3) $(k_1 / _2 T_1 + k_2 / _1 T_2) / (k_1 / _2 + k_2 / _1)$ (4) $(k_1 / _1 T_1 + k_2 / _2 T_2) / (k_1 / _1 + k_2 / _2)$

Ans : [3]

105. ,d /ofu dk vo'kk"kd /ofu d Lrj dk 20 dB l de djrk gA rhork e fdru x.kd l deh gkrh g&

(1) 1000 (2) 10000 (3) 10 (4) 100

Ans : [4]

106. ;fn C_p o C_v Øe'k% fu;r nkc o fu;r vk;ru ij ukbVkt u dh fof'k"V Å"ek ifr ,dkd n0;eku dk inf'kr djrk gA rk&

(1) $C_p - C_v = R/28$ (2) $C_p - C_v = R/14$

(3) $C_p - C_v = R$ (4) $C_p - C_v = 28\ R$

Ans : [1]

107. pEcdh; {k=k e bldh fn'kk d yEcor ,d vkof'kr d.k xfr djrk gA rk&

(1) lox ifjofrr gkrk g yfdu xfrt Åtk fu;r g

(2) d.k d nkuk lox o xfrt Åtk fu;r ugh g

(3) d.k d nkuk lox o xfrt Åtk fu;r g

(4) xfrt Åtk ifjofrr gkrh g yfdu lox fu;r gA

Ans : [1]

108. nk leku pkyd rkj AOB o COD ,d&nlj ij ledk.k :i l j[k g, gA rkj AOB e fo|r /kkjk I_1 iokfgr gkrh gA o rkj COD e I_2 iokfgr gkrh gA rkj AOB o COD d lery d yEcor fn'kk e] O l njh 'd' ij fcUn ij pEcdh; {k=k gkxk&

(1) $\frac{\mu_0}{2\pi}\left(\frac{I_1+I_2}{d}\right)^{1/2}$ (2) $\frac{\mu_0}{2\pi d}(I_1^2 + I_2^2)^{1/2}$ (3) $\frac{\mu_0}{2\pi d}(I_1 + I_2)$ (4) $\frac{\mu_0}{2\pi d}(I_1^2 + I_2^2)$

Ans : [2]

109. 50ºC ij rkj dk ifrjk/k 5 vke g o 100°C ij 6 vke gA 0ºC ij rkj dk ifrjk/k gkxk&

(1) 2 ohm (2) 1 ohm (3) 4 ohm (4) 3 ohm

Ans : [3]

110. ,d lekUrj lyV l/kkfj=k] ftld lyVk d e/; ijko|rkd fu;rkd K dk ijko|rkd g] dh /kkfjrk C g vkj foHko V okYV ij vkof'kr fd;k tkrk gA ijko|rkd iVVhdk dk lyVk d e/; l /kj&/khj gVk;k tkrk g vkj fQj io'k djk;k tkrk gA bl iØe e fudk; }kjk fd;k x;k dy dk; g&

(1) ½ (K – 1) CV^2 (2) CV^2 (K – 1) /K (3) (K –1) CV^2 (4) zero

Ans : [4]

111. ;fn g_E o g_m Øe'k% i Foh o pUnek dh lrgk ij x:Roh; Roj.k gA ;fn nkuk lrgk ij fefydu ry fcUn i;kx fd;k tkrk g] rk vuikr

¼pUnek ij byDVkfud vko'k@i Foh ij byDVkfud vko'k½ Kkr dj&

(1) 1 (2) 0 (3) g_E/g_M (4) g_M/g_E

Ans : [1]

112. ,d cMh 2R f=kT;k dh o Ùkkdkj pdrh l ,d R f=kT;k dh o Ùkkdkj pdrh dk bl idkj vyx fd;k tkrk g fd nkuk pdfr;k dh ifjf/k lkekrh gkA cMh pdrh d dUn l αR ij u;h pdÙkh dk n0;eku dUn gA α dk eku g&

(1) 1/3 (2) 1/2 (3) 1/6 (4) 1/4

Ans : [1]

113. {kfrt l θ dk.k d ur ry ij] f=T;k R, n0;eku M o tMRo vk?k.k 'I' dk ,d leku fi.M uhp dh vkj y<drk ¼fcuk fQly½ gA rk bldk Roj.k g&

(1) $\frac{g\sin\theta}{1+I/MR^2}$ (2) $\frac{g\sin\theta}{1+MR^2/I}$ (3) $\frac{g\sin\theta}{1-I/MR^2}$ (4) $\frac{g\sin\theta}{1-MR^2/I}$

Ans : [1]

114. dfUn; cy l ?k.ku djr d.k dk dk.kh; lox fdld dkj.k fu;r g&

(1) fu;r cy (2) fu;r j[kh; lox (3) 'kU; cyk?k.k (4) fu;r cyk?k.k

Ans : [3]

115. ,d 2kg dk Cykd] {kfrt Q'k ij 4 m/s dh pky l fQlyrk gA ;g vlihfMr fLix l VDdj djrk g] o bldk tc rd lihfMr djrk g rc rd Cykd xfrghu u gk tk;A xfrd ?k"k.k cy 15 N g o fLix fu;rkd 10,000 N/m gA fLix lihfMr gkrh g&

(1) 5.5 cm (2) 2.5 cm (3) 11.0 cm (4) 8.5 cm

Ans : [1]

116. ,d d.k dk {kfrt l 60º l xfrt Åtk K d lkFk i{kfir fd;k tkrk gA mPpre fcUn ij xfrt Åtk g&

(1) K (2) 'kU; (3) K/4 (4) K/2

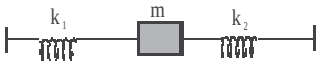
Ans : [3]

117. ;x d f}&fLyV i;kx e] ,d fcUn ij rhork ftldk iFkkUrj $\frac{\lambda}{6}$ (λ mi;kx e yk; x; idk'k dh rjxn/; g) I gA ;fn I_0 vf/kdre rhork g] rk $\frac{I}{I_0}$ cjkcj g&

(1) $\frac{1}{\sqrt{2}}$ (2) $\frac{\sqrt{3}}{2}$ (3) $\frac{1}{2}$ (4) $\frac{3}{4}$

Ans : [4]

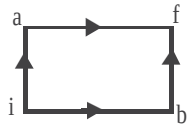
118. fp=kkulkj] k_1 o k_2 cy fu;rkd dh nk fLix n0;eku m l tMh gA n0;eku d nkyuk dh vko fÙk f g ;fn nkuk k_1 o k_2 dk ey eku l pkj xuk c<k fn;k tk; rk nkyuk dh vko fÙk gkxh&



(1) f/2 (2) f/4 (3) 4f (4) 2f

Ans : [4]

119. tc iaf iFk d vufn'k] fudk; dk fLFkfr i l fLFkfr f rd y tk;k tkrk g rk ;g Kkr gkrk g fd Q = 50 cal o W = 20 cal A iFk ibf d vufn'k Q= 36 cal g rk iFk ibf d vufn'k W g&



(1) 6 cal. (2) 16 cal. (3) 66 cal. (4) 14 cal.

Ans : [1]

120. m n0;eku dk d.k vk;ke 'a' o vko fÙk 'v' l ljy vkoÙk xfr dj jgh gA lkE;koLFkk dh fLFkfr l flj dh vkj xfr d nkjku vklr xfrt Åtk g&

(1) $\pi^2 m a^2 v^2$ (2) 1/4 m a^2 v^2 (3) $4\pi^2 m a^2 v^2$ (4) $2\pi^2 m a^2 v^2$

Ans : [1]