FWC

aho. tyaf fyt‰j j‰i z ffsjj‰d mDrui z Ald
njhz ilkhdhWnts‰ffs e‰iyakelhj Jk

Field Work Centre

j t i z g gul i r› A+ i y - 2015

Term Examination, July- 2015

juk :- 12 (2016)	ngs j‰f t‰ay	Neuk :- 3.00 kz‰jj‰ahyk

mw‰TWjjyfs :

- ✶ **vyyh t‰dhffSfFk t‰il jUf.**
- ✶ **ckJ RlnlziZ t‰iljjhs‰y vOJf.**
- ✶ **k‰fr ru‰ahd t‰ilfSfF ckJ t‰iljjhs‰y Gssb (X) ,Lf.**

gFj‰ - I

1. Nfhz cejjj‰d gu‰khzk

   1) MLT^{-1} 2) ML^2T^{-2} 3) ML^2T^{-1} 4) $ML^{-1}T^{-1}$ 5) $ML^{-2}T^{-1}$

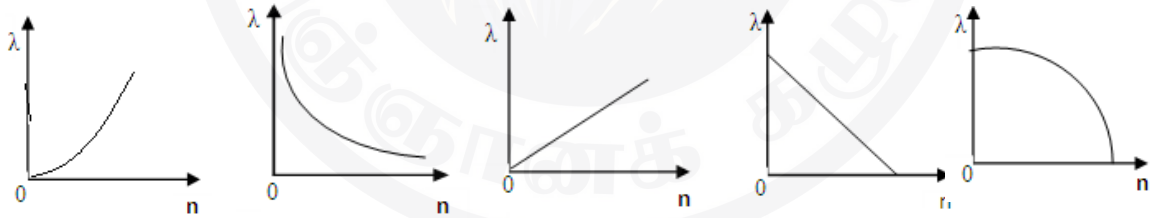
2. xU fyyhdJ Gt‰augg‰d fo e‰iyfFjjhf NkyNehff‰ vw‰aggLf‰dwJ› g‰dtUk fz‰aqfs‰y mj‰Aau Gss‰a‰y mtww‰d ,affjj‰ir Gwkhwwkiltj

   A) Ntfk B) ,lgngurr‰ C) MuKLfy

   1) (A) klLk 2) (C) klLk 3) (A) Ak (B) klLk

   4) (A) Ak (C) klLk 5) (A), (B), (C) vyyhk

3. xs‰a‰ay Clfjj‰d Kw‰TrRlb (n) cld› xs‰ miya‰d miyesk khwwkiltij j‰wkglffhlLk tiuG



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

4. xdNwhL xdW njhLifa‰Yss xU Ft‰T t‰yiyiaAk› xU Fo‰T t‰yiyiaAk r‰wa J}ujjhy NtWgLjJk NghJ mtww‰d Nrukhdf Ft‰ajJ}uk›

   1) FiwAk 2) mj‰fu‰fFk 3) Grr‰akhFk

   4) Kbt‰y‰ahFk 5) khwhky ,UfFk

5. rkesKss xUKid %ba Xfd FohAk› j‰wej XfdFohAk mbggilrRujj‰y xjj‰irffggLk NghJ nrffDfF 2 mbgGffs Nflf‰dwd. j‰wej Foha‰d esjij miuklqfhff‰ %ba Foha‰d esjij ,Uklqfhff‰Ak mbggilrRujj‰y xjj‰irfffr nraaggLk NghJ NflFk mbgGffs‰d vz z‰fif

   1) 2 2) 5 3) 6 4) 7 5) 8

6. xU glfhdJ Mwwpd jpiratpy nryYk NghJ xU Fwpggpll J}ujijf flff vLfFk Neuk 6 kzpjjpahyk MfTk Mwwpd jpirfF vjpuhf glF nryYk NghJ mfFwpggpll J}ujij flff vLfFk Neuk 10 kzpjjpahykhfTk ,Uggpd mgglfhdJ epiyahd eupy mjJ}ujij flff vLfFk Neuk

1) 6.5 kzpjjpahyk 2) 8 kzpjjpahyk 3) 9 kzpjjpahyk
4) 7.5 kzpjjpahyk 5) 8.5 kzpjjpahyk

7. Mfha tpkhdnkhdW khwhf fjpV ,y fpilahf gwej tzzk jpUkGk NghJ mjpy jhfFk tpisAs tpir› gpdtUk vt tpirfspd tpisAs Mf ,UfFk?

(A) caujJk tpir (B) mjd epiw (C) jil tpir

1) (A) klLk rup 2) (B) klLk rup 3) (A), (B) klLk rup
4) (A), (C) klLk rup 5) (A), (B), (C) vyyhk

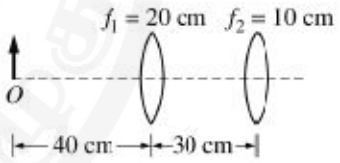
8. xU gY}dpdJk mjd csslffjjpdJk jpzpT M Mf cssNghJ gY}dhdJ ruhd MuKLfy a cld fo Nehffp ,wqFfpwJ. csslffjjpypUeJ vttsT jpzpT tpLtpfFk NghJ gY}dhdJ mNj ruhd MuKLfy a cld Nky Nehffp ,aqFk. (gY}dpd fdtsT khwtpyiy vdf nfhsf.)

1) $\frac{2a}{g+a}$ M 2) $\frac{2a}{g-a}$ M 3) $\frac{a}{g+a}$ M 4) $\frac{g}{g+a}$ M 5) $\frac{2g}{g+a}$ M

9. 30cm ,iljJ}ujpy css 20cm, 10cm Ftpaj J}uKila nkyypa FtpT tpyiyfspy 20cm Ftpaj J}uKila tpyiyfF Kddhy 40cm J}ujjpy nghUs csspid cU fhlLfpdwJ.

,Wjp tpkgk NjhdWtJ

1) ,uzhtJ tpyiyfF tyJ gffjjpy 5cm J}ujjpy
2) ,uzhtJ tpyiyfF tyJ gffjjpy 13.3cm J}ujjpy
3) ,uzhtJ tpyiyfF tyJ gffjjpy Kbtpypapy
4) ,uzhtJ tpyiyfF ,lJ gffjjpy 13.3cm J}ujjpy
5) ,uzhtJ tpyiyfF ,lJ gffjjpy 100cm J}ujjpy



10. 30cm miy esKss tpUjjpaiyapd› 60^0 mtjij tpjjpahrjjpy csspU Gsspf Sffpilapyhd ,opTjJ}uk

1) 5cm 2) 10cm 3) 15cm 4) 20cm 5) 7.5cm

11. ghuitf Fiwghlbwf ghtpffggLk %fFf fzzhb tpyiyapdhy cUthffggLk tpkgk

1) czikahdJ› jiyfohdJ 2) czikahdJ› epkpuejJ
3) khakhdJ› jiyfohdJ 4) khakhdJ› epkpuejJ
5) Fiwghlil nghWjjJ

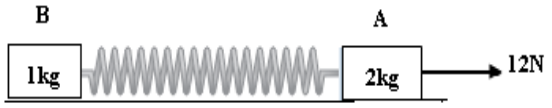
12. xU ywwu FLitahdJ rpwpjsT ,urjij nfhzLssJ. FLitapy csstspapd fdtsT ntggepiy khwwjJld khwhJ ,Uff fhzgglJ. fzzhbapd es tpupifjpwd 9×10^{-6}/°C, MfTk ,urjjpd Kggupkhz tpupifjpwd 1.8×10^{-4}/°C) MfTk ,Uggpd› FLitapYss ,urjjpd fdtsT

1) 120 cm^3 2) 150 cm^3 3) 225 cm^3 4) 300 cm^3 5) 450 cm^3

13. xypaiyfs Kidthffkila khllhJ. Vnddpy ,it
1) nghwpKiw miyfs 2) nrytjwF Clfk Njit
3) esgff miyfs 4) FWffiyfs
5) Fiwej NtfKilaJ

14. ,U Jzpfiff SfF ,ilapyhd ksjdik NkhJifapd NghJ fhggiltJ
1) xtnthU Jzpfiffspd cejk 2) xtnthU Jzpfiffspd fjp
3) xtnthU Jzpfiffspd ,aff rfjp 4) ,U Jzpfiffspd nkhjj rfjp
5) ,U Jzpfiffspd nkhjj ,aff rfjp

15.

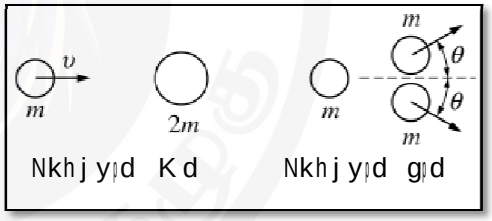


A, B vdDk ,U Fwwpfs cUtpy fhlbaJ Nghy mOjjkhd fpilggugpd kJ itffgglL tpirkhwpy; 100Nm^{-1}, cila ,Nyrhd twRUspdhy ,izjJ> Fwwp B ,d kJ 12N fpiltpiria gpuNahfpfFk NghJ ,U FwwpfSk rk fjpfSld ,aqFnkdpd> twRUspy Nrkpffggk rfjp

1) $48x10^{-2}$ J 2) $16x10^{-2}$ J 3) $8x10^{-2}$ J 4) $4x10^{-2}$ J 5) 0

16. M jpzpTila xU Jzpfifahdj X - mrR topNa V vdDk fjpAld ,aqfp Xatpyss 2m jpzpTila ,uzlhtJ Jzpfifald NkhJfpdwJ. Nkhjypd gpd KjyhtJ Jzpfif XaTfF tu> ,uzlhtJ Jzpfif ,U rk jpzpTss JzLfshf cileJ X – mrRld rkNfhzk $\theta > 0$ mikjJ cUtpy fhlbathW ,aqFfpdwJ. gpdtUk $wWffspy cilej JzLfspd Ntfk gwwp rpahff FwpggpLtJ

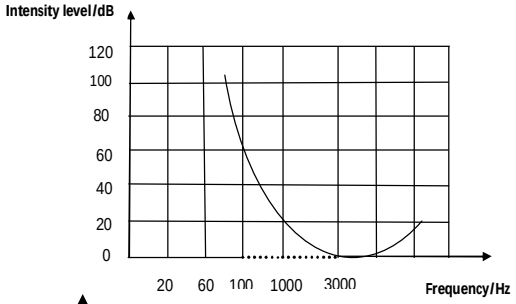
1) xtnthU JzLk fjp *v* cld ,aqFk
2) xU JzL fjp *v* clDk> kwiwa JzL *v* l tpl Fiwej fjpAld ,aqFk
3) xtnthU JzLk fjp *v/2* cld ,aqFk
4) xU JzL fjp *v/2* clDk> kwiwa JzL *v/2* l tpl $ba fjpAld ,aqFk
5) xtnthU JzLk *v/2* l tpl $ba fjpAld ,aqFk



17. jpUrpakhdpapd nrggQnraif gwwpa gpdtUk $wWffspy rpahdJ / rpahdit
A) rkheju fjpufis ngwjjffjhf njhiyfhlb nrggQnraaggLk
B) rkheju fjpufis ntspNawwjjffjhf Neutpirahffp nrggQnraaggLk
C) njhiyfhlbapd Roww mrRfF rkhejukhf mpajjpd KwT Xuqfs ,Uffjjffjhf mpaNkir kllQnraaggLk
1) (A) klLk rp
2) (B) klLk rp
3) (A), (B) klLk rp
4) (A), (C) klLk rp
5) (A), (B), (C) vyyhk rp

18. nrt;ggiwa;d FWfFntlLg gugG $12mm^2$ MfTss egu xUtu;d xy;rnrw;Tkll mj;untz tiuG fNo fhllgglLssJ. ,eegu 100 Hz mj;untz xy;ia NflFk NghJ nrt;ggiwa;y gLk xy;a;d tY

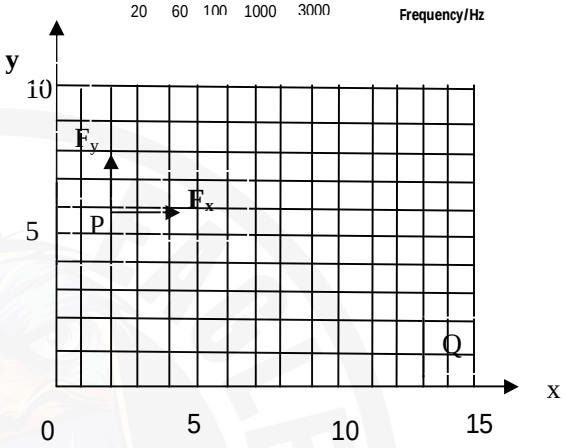
1) 12×10^{-2} W
2) 12×10^{-12} W
3) 6×10^{-12} W
4) 12×10^{-6} W
5) 6×10^{-2} W



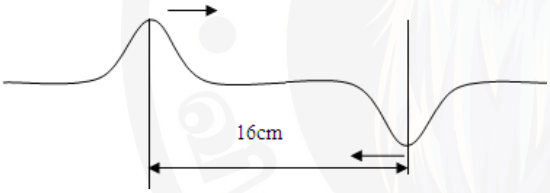
19. Xu clyy; jhfFk khwht;ir F ,d $Wfs

$F_x = 3N$, $F_y = 4N$ tiug;y fhllgglLssJ. mt clyhdJ Gss;s P (x = 2m ,y = 6m) ,y ,UeJ Gss;s Q (x = 14m, y = 1m) ,wF mirAk vd;d mtt;ira;dhy clykJ nraaggll Ntiy

1) 16J 2) 30J 3) 46J
4) 56J 5) 65J



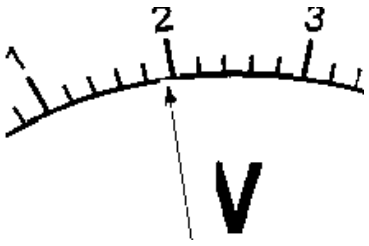
20.



vj;u j;ira;y $4cms^{-1}$ fj;Ald ,aqFk ,U rutrkkhd JbgGffs Kjy;y 16cm ,iljJ}uj;y cssij cU fhlLf;dwJ. 2s Neujj;d g;ddu JbgGffs;d nkhjj rfj;

1) G+rr;ak
2) KOikahf ,affrrfj;
3) KOikahf ksjdik mOjjrfj;
4) gFj;ahd ,affrfj;Ak› gFj;ahd ksjdik mOjj rfj;Ak
5) ru; miu gqF ,affrfj;Ak› kFj; miugqF mOjjrfj;

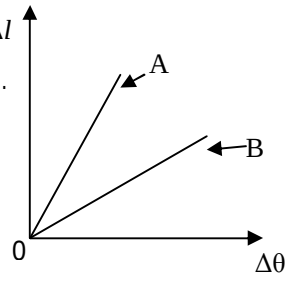
21.



Nthywkhd;nahdw;dJ fhlba;d j;Ukgiy cU fhlLf;dwJ. fhlba;d thr;igAk› cau kj;gglL tOitAk KiwNa ru;ahf Fwgg;LtJ

1) 2.0V, 0.2V 2) 1.9V , 0.2V 3) 2.0V , 0.1V
4) 1.9V, 0.1V 5) 1.8V , 0.1V

22. miw ntggepiyapYss A, B vdDk cNyhfNfhyfs xdwhf ntggggLjjggLfpdwd. mtwwpd mjpfupfFk ntggepiy $\Delta\theta$,wFk tpuT Δl ,wFkpilapyhd khwwjij tiuG fhlLfpdwJ. A, B cNyhf Nfhyfs gwwpa gpdtUk $wWffis fUJf.



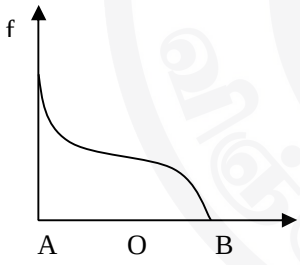
(A) A ,d es tpuif jpwd› B l tpl $lthFk

(B) A ,d esk B l tpl $LjyhFk

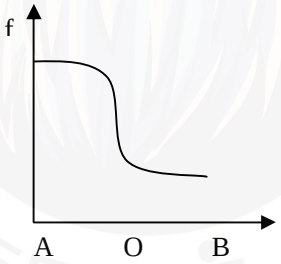
(C) ,U Nfhyfspdjk est puifjpwd X Mukg esk ngUffk ,U Nfhyf SfFk rkk vdpd ,U tiuGf Sk xdNwhL xdW nghUeJk ,f$wWffspy

1) (A) klLk rup
2) (C) klLk rup
3) (A), (B) klLk rup
4) (A), (C) klLk rup
5) (A) , (B) (C) vyyhk rup

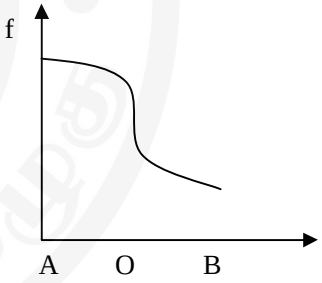
23. 0.1 V khwh fjpAld› khwh mjpuntz f_o ,y xypia vOggpathW AB topNa ,aqFk Kjy xdiw cU fhlLfpdwJ. xyp miyapd Ntfk V MFk. epiyahd mtjhdp 'O' AB, ,y ,UeJ rwW typfp cUtpy fhlbaJ Nghy ,Uggpd mtjhdpahy c zuggLk Njhww mjpuntz f ,d khwiy rpwej Kiwapy fhlLtJ



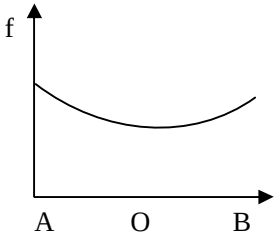
(1)



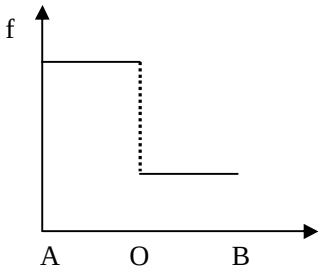
(2)



(3)



(4)



(5)

24. M j‹z‹Tila g‹shjj‹fF j‹zkkhdJ mjd csNs nghsntsp‹ia nfhzLssJ. ,jid eu‹y k‹jffr nraj NghJ mjd fdtst‹y miugqF eu‹y mk‹oeJ k‹jggij cU fhlLf‹dwJ. eu‹dJk› g‹shjj‹ff‹dJk mlujj‹fs KiwNa d, ρ MFk. nghsntsa‹d fdtsT

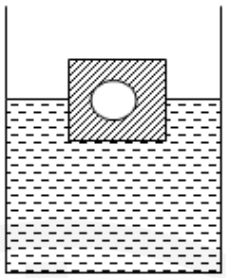
1) $m\left(\frac{1}{d}-\frac{2}{\rho}\right)$

2) $m\left(\frac{1}{\rho}-\frac{2}{d}\right)$

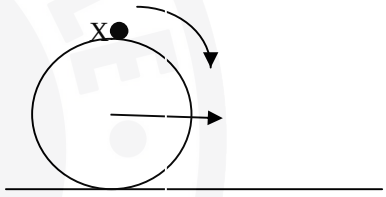
3) $m\left(\frac{2}{d}-\frac{1}{\rho}\right)$

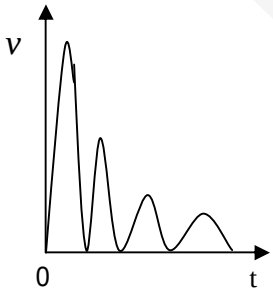
4) $m\left(\frac{1}{2d}-\frac{1}{\rho}\right)$

5) $2m\left(\frac{1}{d}-\frac{1}{\rho}\right)$

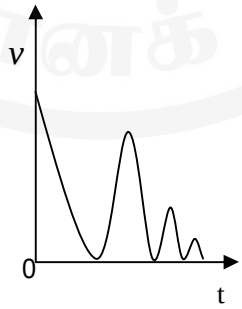


25. cUt‹y fhllgglthW v vdDk Mukg f‹il NtfjJld fulhd f‹iljjsk to‹Na eOthky cUs t‹lggll r‹yyhdJ r‹y Rowr‹fis Mww‹ Xat‹wF tUf‹dwJ. Neuk (t) cld Gt‹ njhlughfr r‹yy‹d Rwwst‹d kJ css Gss‹ X ,d Ntfk (v) ,d gUkd‹d khwiyg g‹dtUk tiuGfs‹y vJ k‹fr r‹wej t‹jjj‹y tiffFw‹ff‹dwJ? (t = 0 ,y Gss‹ X r‹yy‹d mj‹Aau Gss‹a‹y cssJ)

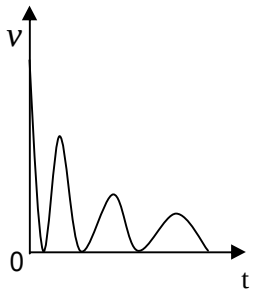




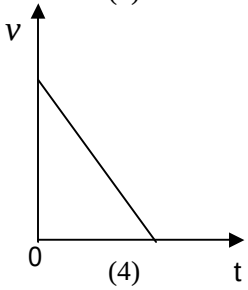
(1)



(2)



(3)



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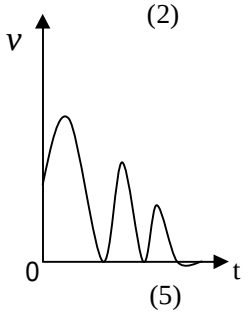


(5)

ehdF tdhffSfFk ,jjhsNyNa tdil vOJf.

$g = 10 Nkg^{-1}$

1. jUggfNfhlghlil cgNahfjJ fz zhbad mlujjdia Jztjwfhf gdtUk cUggbfs ckfF jugglssd.
   - 4cm gff esk nfhzl fz zhb rJuKfd Fwwd ,jd jzT flljjjll 60g (M)
   - 20g, 50g, 100g ediwggbfs (m)
   - kwwuNfhy Ezkhdj jUffzrrd Ntzau ,Lffdkhdd
   - fjjdtsdkG E}yJzLfs
   - eu nfhzl Kfitd jutjij nfhzl Kfit

   (a) (i) rJuKfdad gff esk (a) l 1%, ,Yk $ba nrkikAld msggjwF juggll mstlL cgfuzqfsdy vjid gadgLjJtu?

   .....

   (ii) kwiwa ,U mstlL cgfuzqfis njudT nraahjjwfhd fhuzk ahJ?

   .....

   .....

   (b) (i) fjjdtsdkgdy rkedyggLjjggll kwwuNfhiy cgNahfjJ M l fhzgjwfhd ngaudll tudgljij tiuf. M, M vdgd fjjd tsdkgdy ,UeJ $l_0 l_1$ J}uqfsdy cssd.

   (ii) kwwu Nfhydd Gtdaug ikajij vtthW fhzgu?

   .....

   .....

   (iii) kwwuNfhiy mjd Gtdaug ikajjdy rkedyggLjJtjdy css mD$yk ahJ?

   .....

   .....

   (i) NkNy juggll edwggbfsdy vJ ,gudNrhjidia nraa cfejjhFkd ckJ njudtwfhd fhuzk

   ediw: .....

   fhuzk: .....

   (ii) M ,wfhd Nfhitia m, l, l_1 rhugdy vOJf.

   .....

   (c) (i) kwwuNfhydd fz zhb rJuKfdad ediyia khwwhJ fz zhbad mlujjdia

(d_g) J z‰tjwfhd gu‰Nrhjidg gbfis Fwgg‰Lf.

(ii) eu mst‰Lk mstL ahJ? l_2 vdf nfhsf.

(d) fz zhba‰d mlujj‰(d_g), ,wfhd Nfhitia eu‰d mlujj‰ (d_w), l_2, l (myyJ l_1) rhug‰y ngWf.

(e) khztd xUtd ,gu‰Nrhjida‰d l = 41cm , l_1 = 49cm , l_2 = 35cm, vd ngwwhd› eu› j‰utjj‰d mlujj‰fs KiwNa

(1000 kgm^{-3} and 900kgm^{-3} vd‰d fz zhba‰d mlujj‰ia fhzf.

---

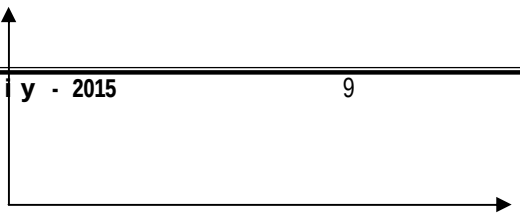
2. ,irftnuhdw‰d mj‰untz iz mw‰a› khztd xUtd Rukhd‰g gu‰Nrhjidia xOqF nraf‰dwhd

(a) (i) mtd gu‰itg ngw mj‰Uk ,irfftiu vqNf itff NtzLk

(ii) mj‰Uk ,ioa‰y NjhdWk miy t‰Ujj‰aiyah / e‰iyahd miyah› FWffiyah / esgff miyah

---

(iii) ghyqfSfF ,ila‰y mj‰Uk ,ioa‰d trrk mjd esjjld khWtij fhlLk tiuig tiuf. (mbggil› Kjyhk Nkwnwhd‰ia fUJf› mbggil gu‰T esk l_0 vd nfhsf.)



(b) mbggil gu‌T esjijg ngWtjwfhd nraKiw gbfis jUf.

-

-

-

(c) khztufs msej mbggilgguT esk(l_o) MfTk Rukhd‌f fkg‌a‌Yss ,Ot‌ir (T) MfTk ,Ugg‌d mbggil gu‌T mj‌untz z‌wfhd Nfhitia l_o, T, M ,d rhug‌y vOJf.

-

(d) jwNghJ khztd ,ggu‌Nrhjidia Nrujj‌ cUfFf fkg‌ AB, BC cld xOqF nrajhd. A, C ghyqfis njhLk Gss‌ahfTk› AB:BC = 3:2 MfTk AB ,d t‌llk BC I Nghy ,UklqFilajhfTk css NghJ mNj ,irftu‌wF ,U fkg‌fs‌Yk gu‌T e‌iy ngwggLf‌dwJ. mjJld B ,y fZ NjhdWf‌dwJ.

(i) AB, BC ,y gu‌T e‌iya‌y NjhdWk jlqfs‌d vz z‌fif KiwNa n_1,n_2 ,wfhd Nfhitfis vOj‌ $\frac{n1}{n2}$ t‌f‌jjijf fhzf

---

(ii) ,U fkgfs;Yk njhdWk jlqfs;d ,oT vz z;fifia fhzf.

AB: ---------- BC: ----------

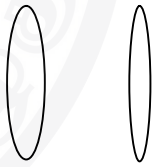
(iii) AC = 1m vd;d fkg; BC ,y NjhdWk cau miyesk ahJ?

(e) fkg; BC ,d myF esjj;zT 1×10^{-3} kgm^{-1} MfTk ,ioa;Yss ,Ot;ir 40N MfTk ,Ugg;d ,irftu;d mj;unt z izf fhzf.

---

3. (a) A, B vdDk ,U t;yiyfis glk fhlLf;dwJ.

(i) ,twiwfnfhzL thd;ay njhiyfhlb xdiw mikff Ntz Lk. nghUs;ahfTk› ghuitjJzlhfTk vtt;yiyfis gadgLjJtu?



nghUs; ----------

ghuitjJzL ----------

(ii) gFj; (a) (i) ,y ckJ nju;t;wfhd fhuzjij t;yiya;d Ft;ajJ}uk rhughf t;sfFf.

(b) t;yiyfs A, B ,d Ft;a esqfs KiwNa f_A, f_B MFk. ,t t;yiyfisg gadgLjj; J}ugnghUs;d t;kgjij Nehffjjffjhd thd;ay njhiyfhlb ,ayghd nrggQ nraifa;y xOqF nraaggllJ.

(i) J}ugnghUs nghUs;d ,lggffjj;y cssnjd fUj> tiyiyfs;d e;iyfis njs;thff fhlb ngau;Lf.

tiyiyfSff;ilggll J}ujij Fwgg;Lf.

(ii) ghuitjJzby;UeJ› vttsT J}ujj;y ,Wj; tikgk NjhdWk

-

(iii) NkNy $wggll nrggQnraif e;iyfF Nfhzg ngu;jhffjj;wfhd Nfhitia vOJf.

-

-

(c) nghUs;ia xs;uthff; ghuitjJzlhy VwgLjjggLk nghUd;a;d tillk (D) msffgg llJ.

(i) NkNy $wggll nrggQnraifa;y› Nfhzgngu;jhffjj;wfhd Nfhitia d,D rhug;y vOJf.

-

(ii) ,t tikgjj;d Kff;ajJtk gww; ahJ $Wtu?

-

-

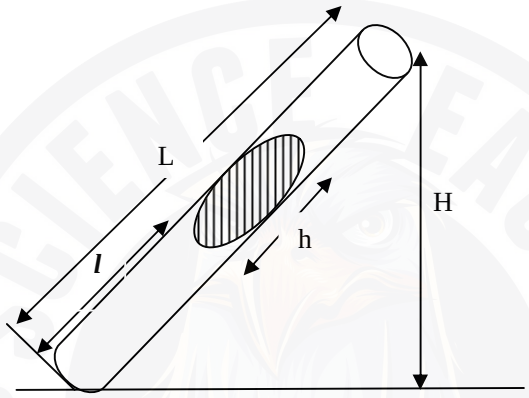
(d) tiyiyfSff;ilggll J}uk (x) khwwgglL mjwF xjj tikgjj;d tillk (d) msffgg llJ.

x ,wFk d,wFk ,ila;yhd njhluig vOJf.

(e) 1/d vju x tiugd gUkllhd tbtjij tiuf.

(f) ,t tiugd x mrrYss ntlLjJzbd klLgngWkhdk vijj jUk

4.



,wFf Fohiag gadgLjj ts kzly mKffjij Jz tjwfhd gu Nrhjid xOqfikgig cU fhlLf dwJ. ,jy xU Kid %lggll ,wFFoha Ds ts e unyhdW ,ur ,ioa dhy milffgglL Foha rhathf itffgglLssJ.

(a) ,ur eu iy ,wF Foha Ds vtthW clGFjJtu?

(b) cUt y fhllggll Foha d rhathd e iya y milgll ts a d fdtsT (V) mKffk (P) ,wfhd Nfhitfis vOJf. ts kzly mKffk π cm Hg ,wF Foha d FWfFntlLg gugG (a) vdTk nfhsf.

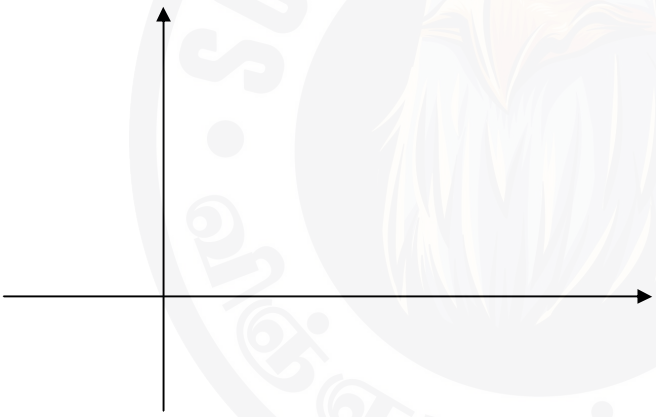
(c) ,gu Nrhjidia Nkwnfhss eu vLfFk thr gGffs ahit?

(d) P, V ,wF gFj‌ (b), ,y vOj‌a Nfhitffis gadgLjj‌ P, V ,wF ,ila‌yhd njhluig vOJf. njhlug‌Yss Nkyj‌f fz‌aqfis ,dk fhzf.

(e) NkYss Nfhitia NeuNfhlL tiug‌wF Vwg knshOqFgLjJf. (rhuhkhw‌ia x mrr‌y Fw‌ff

---

(f) vj‌ughuffggLk tiuig gUkllhf tiuf. mrRffis njs‌thf ngau‌Lf.



(g) **π,** ,d ngWkj‌ia fhzgjwfhf NkYss tiuig tiueJ tiug‌d gbjj‌wd $1.64 \times 10^{-4}\ cm^{-1}(cm\ Hg)^{-1}$. vdTk ntlLjJ zL $0.05\ cm^{-1}$ vdTk mw‌ejhd

(i) h= 10cm, L= 40cm and $\frac{1}{0.61} \approx 1.64$ vd‌d **π** ,dJ ngWkj‌iaf fhzf.

(ii) Foha f‌ilahf itffggLk NghJ› Foha‌Ds milgll ts‌ e‌uy‌d esk ahJ?

-

-

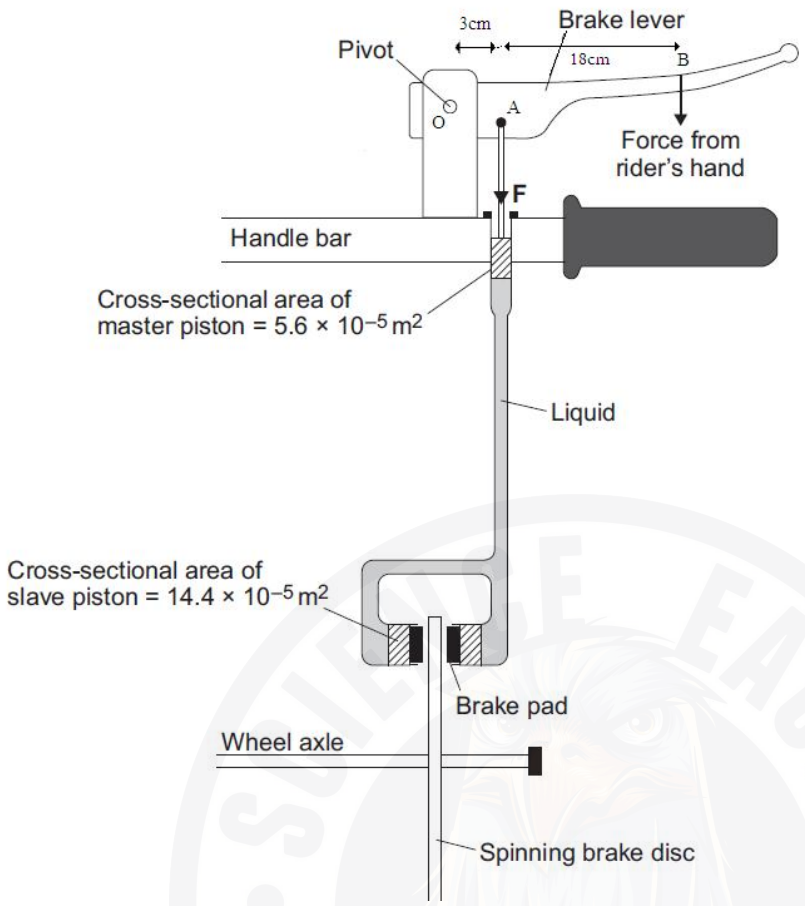
(iii) FWfpa ,urepuiyg gadgLjjp ,ggupNrhjidia ntwwpfukhf nraa KbAkh? ckJ tpilia tpsfFf.

(iv) *l* ,wF vjpuhd H ,d gUkllhd tiuig (-L ≤ H ≤ +L)

Part-II(B)

Answer any two questions only.

1.



The figure shows mountain bikes hydraulic breaking system which could be used to stop spinning brake disc.

A force $\mathbf{F_b}$ is applied perpendicular to the brake lever at B. Brake lever moves freely about a fixed axis through

O and perpendicular to the plane of the paper. A force **F** to be applied perpendicularly to the master piston the

resulting pressure is transmitted by the brake liquid to the two identical slave pistons. Then the brake pads

attached to the pistons move a little distance and press against both sides of the spinning brake disc. Cross

sectional area of the master piston and the slave piston are 5.6×10^{-5} m^2 and 14.4×10^{-5} m^2 respectively.

(a) Pascal's principle applicable for gases, a gas cannot be used as the working fluid in a hydraulic jack, explain the reason for this.

(b) What property of liquid enables a hydraulic brake system to work ?

(c) When the rider's hand pulls on the break lever, the master piston applies a pressure of 1.5×10^6 Pa to the

liquid, calculate the force **F** exerted on the liquid by the master piston.

(d) (i) Clearly denotes direction of force $\mathbf{F_a}$ acts on the point **A** in the brake lever, and write down the relation between **F** and $\mathbf{F_a}$.

(ii) Calculate the force $\mathbf{F_b}$ .Using the information in the diagram,(shortest distance between **F** and $\mathbf{F_b}$ is 18cm.)

[See page forteen

(e) (i) What is the pressure exerted on the liquid by the slave piston.

(ii) Calculate the force on a slave piston.

(f) If the coefficient of dynamic friction between the brake pads and spinning brake disc is 0.5 , calculate the frictional force acting on the spinning disc due to each pad when they are pressed against the spinning disc.

(g) Wheel and spinning brake disc of axis of rotation are same and radius of spinning disc is 6cm. Moment of inertia wheel and spinning disc about is 0.12 kgm^2 ,when brakes are applied wheel comes to rest in 1sec.

(i) Find the frictional torque act on the spinning disc. Assume that the frictional force remains constant throughout the motion and the distance from the rotating axis of wheel to the line of action of the frictional force is 6cm.

(ii) Calculate the angular velocity of the wheel, before applying the brakes.

(iii) How many revolutions does the wheel make before coming to rest ?

(iv) How do you modify the wheel, to reduce the revolution before coming to rest?

2.

3. The eye has the ability to form clear images on the retina of objects at differing distances from the eye, actually

the combination of the cornea and the eye lens forms the image. The cornea is a transparent window and has a

high refractive index, it can be considered as a convex lens with a fixed focal length while the focal length of the

eye lens can be adjust by ciliary muscles movements, this effect is called accommodation. In practice two separate images on the retina would need to be separated by a distance of 50 μm to be distinguished.

(a) (i) Which part of the eye, the light rays undergoes more deviation? Give reason.

(i) What is meant by accommodation?

[See page fifteen

(b) The corena and eye lens of a normal, unaccommodated eye has a power of + 50 dioptres.

(i) Find the distance between eye lens and retina.

(ii) Calculate the power of the lens system required to clearly focus on objects at a point 25cm from the eye.

(ii) If the power of cornea 44 diopters, calculate the focal length of the eye lens for the case mentioned above in part (b) (ii).

(iii) Draw the shape of eye lens for the following cases

- Eye is in relax position.
- Eye is in full accommodation.

(c) A person with short sight has a far point of 250 cm and near point of 15 cm.

(i) Draw a ray diagrams for the far point of normal eye and defect eye.

(ii) Calculate the power of the spectacle lens required to enable distant objects to be seen.

(iii) Calculated the near point for the person when using this spectacle lens.

(iv) State the range of distinct vision when wearing the spectacles.

(v) When the person wearing the spectacles, what is the minimum separation of two dots to be seen clearly?

(consider length of the eye ball is 2cm)

FWC

aho. tyaf fyt‹j j‹i z ffsjj‹d mDrui zAld njhz ilkhdhWnts‹ffs e‹iyakelhjJk

Field Work Centre

j t i z g gul i r› a+i y - 2015

Term Examination, July - 2015

juk :- 12 (2016) **ngsj‹ft‹ay**

gFj‹– II (A) m i kgGf flLiu t‹dhffs

ehdF t‹dhffSfFk ,jjhs‹NyNa t‹il vOJf.

$g = 10 Nkg^{-1}$

1. j‹UggfNfhlghlil cgNahf‹jJ f z zhba‹d mlujj‹iaj Jz‹tjwfhf g‹dtUk cUggbfs ckfF juggllssd.

- 4cm gff esk nfhzl fz zhb rJuKf‹ Fww› ,jd j‹z‹T f‹lljjll 60g (M)
- 20g, 50g, 100g e‹iwggbfs (M)
- kwwuNfhy› Ezkhd‹j j‹Uffz‹rr› Ntz‹au ,Lff‹khd‹
- fjj‹t‹s‹kG› E}yJzLfs
- eu nfhzl Kfit› j‹utjij nfhzl Kfit

(a) (i) rJuKf‹a‹d gff esk (a) l 1%, ,Yk $ba nrkikAld msggjwFj juggll mstlL cgfuzqfs‹y vjidg gadgLjJtu?

.....

(ii) kwiwa ,U mstlL cgfuzqfis nju‹T nraahjjwfhd fhuzk ahJ?

.....

.....

(b) (i) fjj‹ t‹s‹kg‹y rke‹iyggLjjggll kwwuNfhiy cgNahf‹jJ M l fhzgjwfhd ngau‹ll tu‹gglj ij tiuf. M, m vdgd fjj‹ t‹s‹kg‹y ,UeJ l, l_1 J}uqfs‹y cssd.

(ii) kwwu Nfhy‹d Gt‹augG ikajij vtthW fhzgu?

.....

.....

(iii) kwwuNfhiy mjd Gt‹augG ikajj‹y rke‹iyggLjJtj‹y css mD$yk ahJ?

.....

.....

(c) (i) NkNy juggll epiwggbfspy vJ ,ggupNrhjidia nraa cfejjhFk› ckJ njupjpwfhd fhuzk

epiw: .....

fhuzk: .....

(ii) M ,wfhd Nfhitia m, l, l_1 rhupy vOJf.

.....

(d) (i) kwwuNfhypd fzzhb rJuKfpad epiyia khwwhJ fzzhbapd mlujjpia (d_g) Jzpjwfhd gupNrhjidg gbfisf Fwpgpf.

.....

.....

.....

(ii) eu mstpLk mstL ahJ? l_2 vdf nfhsf.

.....

(e) fzzhbapd mlujjp (d_g), ,wfhd Nfhitia eupd mlujjp (d_w), l_2, l **(myyJ l_1)** rhupy ngWf.

.....

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.....

.....

(f) khztd xUtd ,ggupNrhjidapd $l = 41cm$, $l_1 = 49cm$, $l_2 = 35cm$, vd ngwwhd› eu› jputjjpd mlujjpfs KiwNa $1000\ kgm^{-3}$, $900 kgm^{-3}$ vdpd fzzhbapd mlujjpiaf fhzf.

.....

.....

.....

2. ,irftnuhdwpd mjpuntziz mwpa› khztd xUtd Rukhdpg gupNrhjidia xOqF nrafpdwhd.

(a) (i) mtd gupitg ngw mjpUk ,irfftiu vqNf itff NtzLk?

.....

(ii) mjpUk ,ioapy NjhdWk miy tpUjjpaiyah / epiyahd miyah› FWffiyah / esgff miyah?

.....

(iii) ghyqfSfF ,ilaiy mjUk ,ioad trrk mjd esjJld khWtij fhlLk tiuig tiuf. (mbggil› Kjyhk Nkwnwhdia fUJf› mbggil guT esk l_0 vdf nfhsf.)

(b) mbggil guT esjijg ngWtjwfhd nraKiw gbfis jUf.

.....

.....

.....

(c) khztd msej mbggilg guT esk (l_o) MfTk Rukhdf fkgaiYss ,Otir (T) MfTk fkgaid myF esjjizT (m) MfTk ,Uggid mbggil guT mjuntz zwfhd Nfhitia l_o, T, M ,d rhugiy vOJf.

.....

(d) jwNghJ khztd ,gguNrhjidia Nrujj cUfFf fkg AB, BC cld xOqF nrajhd. A, C ghyqfis njhLk Gssiahf Tk› AB:BC = 3:2 MfTk AB ,d tilk BC I Nghy ,UklqFilajhfTk css NghJ mNj ,irftuwF ,U fkgfsiYk guT eiy ngwggLfidwJ. mjJld B ,y fZ NjhdWfidwJ.

(i) AB, BC ,y guT eiyaiy NjhdWk jlqfsid vz zif if KiwNa n_1,n_2 ,wfhd Nfhitfis vOj $\frac{n1}{n2}$ tifjjijf fhzf.

.....

.....

.....

.....

(ii) ,U fkgfsiYk NjhdWk jlqfsid ,oT vz zififiaf fhzf.

AB: .....

BC: .....

(iii) AC = 1m vdd fkg BC ,y NjhdWk cau miyesk ahJ?

.....

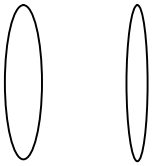
(e) fkg BC ,d myF esjjizT 1×10^{-3} kgm^{-1} MfTk ,ioaiYss ,Otir 40N MfTk ,Uggid ,irftud mjuntzizf fhzf.

.....

.....

3. (a) A, B vdDk ,U tpyiyfisg glk fhlLfpdwJ.

(i) ,twiwf nfhzL thdpay njhiyfhlb xdiw mikff Ntz Lk. nghUspahfTk› ghuitjJzlhfTk vttpyiyfisg gadgLjJtu?



A B

nghUsp .....

ghuitjJzL .....

(ii) gFjp (a) (i) ,y ckJ njuptpwfhd fhuzjij tpyiyapd FtpajJ}uk rhughf tpsfFf.

.....

.....

(b) tpyiyfs A, B ,d Ftpa esqfs KiwNa f_A, f_B MFk. ,t tpyiyfisg gadgLjjp J}ugnghUspd tpkgjij Nehffjjffjhd thdpay njhiyfhlb ,ayghd nrggQ nraifapy xOqF nraaggllJ.

(i) J}ugnghUs nghUspapd ,lggffjjpy cssnjdf fUjp tpyiyfspd epiyfis njspthff fhlbg ngaupLf. tpyiyfSffpilggll J}ujijf Fwpgpf.

(ii) ghuitjJzbypUeJ› vttsT J}ujjpy ,Wjp tpkgk NjhdWk

.....

(iii) NkNy $wggll nrggQnraif epiyfF Nfhzg ngupjhffjjpwfhd Nfhitia vOJf.

.....

.....

(c) ` nghUspia xsputhffp ghuitjJzlhy VwgLjjggLk nghUspapd tpkgjij xU jpiuapy ngwW mjd tpllk (d) nghUspapd tpllk (D) msffgpllJ.

(i) NkNy $wggll nrggQnraifapy› Nfhzgngupjhffjjpwfhd Nfhitia d, D rhugpy vOJf.

.....

(ii) ,t tpkgjjpd Kffpajjtk gwwp ahJ $Wtu?

.....

.....

(d) tpyiyfSffpilggll J}uk (x) khwwgglL mjwF xjj tpkgjjpd tpllk (d) msffggllJ.

x ,wFk d ,wFk ,ilapyhd njhluig vOJf.

.....

.....

.....

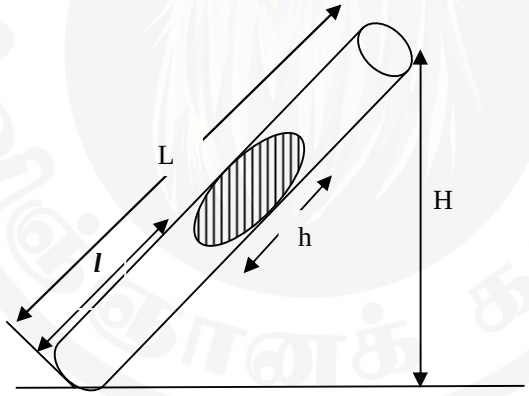
(e) 1/d vjpu *x* tiugpd gUkllhd tbtjij tiuf.

(f) ,t tiugpd *x* mrrpYss ntlLjJzbd klLgngWkhdk vijj jUk?

.....

.....

4.



,wFf Fohiag gadgLjjp tspkzly mKffjij Jzptjwfhd gupNrhjid xOqfikgig cU fhlLfpdwJ. ,jpy xU Kid %lggll ,wFf Fohapds tsp epunyhdW ,ur ,ioapdhy milffgglL Foha rhathf itffgglLssJ.

(a) ,ur epuiy ,wFf Fohapds vtthW clGFjJtu?

.....

(b) cUtpy fhllggll Fohapd rhathd epiyapy milgll tspapd fdtsT (V) mKffk (P) ,wfhd Nfhitfis vOJf. tspkzly mKffk π cm Hg ,wFf Fohapd FWfFntlLg gugG (a) vdTk nfhsf.

.....

.....

.....

(c) ,ggu Nrhjidia Nkwnfhss eu vLfFk thr gGffs ahit?

.....

.....

(d) P, V ,wF gFj (b), ,y vOja Nfhitfisg gadgLjj P, V ,wF ,ila yhd njhluig vOJf. njhlug Yss Nkyjf fz aqfis ,dk fhzf.

.....

.....

.....

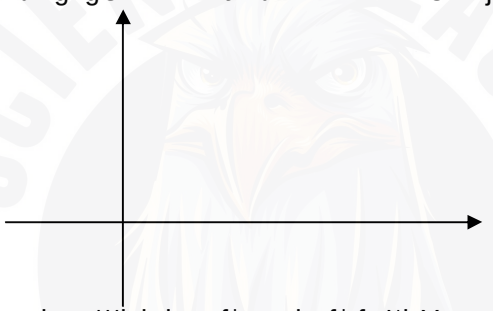
(e) NkYss Nfhitia NeuNfhlL tiug wF Vwg knshOqFgLjJf. (rhuhkhw ia x mrry Fwff.

.....

.....

.....

(f) vjughuffggLk tiuig gUkllhf tiuf. mrRffis njs thfg ngau Lf.



(g) khztd xUtd π, ,d ngWkjia fhzgjwfhf NkYss tiuig tiueJ tiug gbjjwd

$1.64 \times 10^{-4}\ cm^{-1}(Cm\ Hg)^{-1}$. vdTk ntlLjJzL $0.05\ cm^{-1}$ vdTk mwejhd.

(i) h= 10cm, L= 40cm and $\frac{1}{0.61} \approx 1.64$ vd π ,dJ ngWkjiaf fhzf.

.....

.....

.....

(ii) Foha filahf itffggLk NghJ› Foha Ds milgll ts euyd esk ahJ?

.....

.....

(iii) FWfa ,ur euiyg gadgLjj ,ggu Nrhjidia ntwwfukhf nraa KbAkh? ckJ tilia tsfFf.

.....

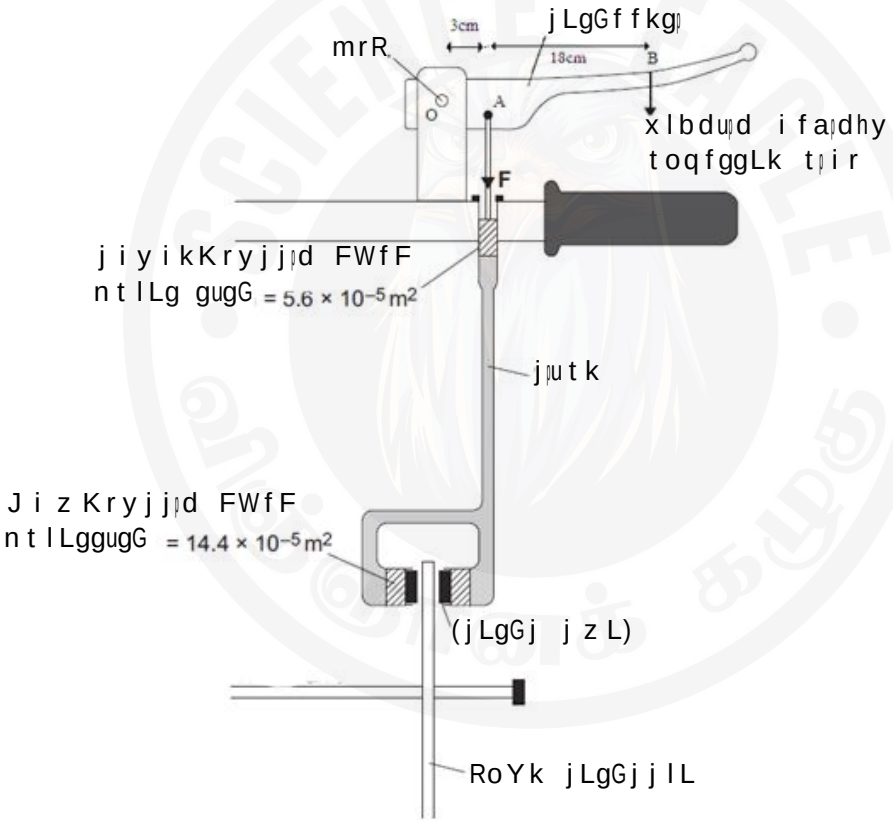
.....

(iv) *l* ,wF vjuhd H ,d gUkllhd tiuig $(-L \leq H \leq +L)$ vdDk trry tiuf.

gFj‹ – II (B)

VjhtJ ,U t‹dhffSfF klLk t‹il jUf.

1)



kiyNawf$ba irff‹s xdw‹d eu‹ay jLgGj njhFj‹ia cU fhlLf‹dwJ. ,J #oYk jLgG jlil e‹wghlljjffjhFk. Gss‹ B ,y jLgG fkg‹ (Brake lever) kJ mjwF nrqFjjhf F_b vdDk t‹iria g‹uNahf‹ggjd %yk ,J eilKiwggLjjggLk. jLgGf fkg‹ahdJ (Brake lever) O ,D}lhf jhs‹wF nrqFjjhf nryYk mrRggww‹ Rahjdkhf RodW j i y ik Kryjj‹d (Master piston) kJ F vdDk t‹iria nrqFjjhf g‹uNahf‹ffdwJ. ,jd t‹isthf c z lhFk mKffk jLgG j‹utjj‹d (brake liquid) %yk ,U rutrkkhd J i z KryqfSfF CL fljjggLf‹dwJ. mgNghJ

mkKryqfSld ,izffggll jLgG jpzLfs (brake pads) rpwpJ J}uk efueJ RoYk jLgGj jlbd ,U gffqfpd kJk nrqFjjhf mOjJfpdwd. jiyikz Jiz Kryqfspd FWfF ntlLg guggsT KiwNa $5.6 x10^{-5} m^2$, $14.4 x 10^{-5} m^2$ MFk.

(a) thAffSfF gh]fypd jjJtjij gpuNahfpffyhkz Mdhy eupay caujjpfspy nrawghlL ghakkhf thAffisg gadgLjj KbahJ. ,jwfhd fhzjij tpsfFf.

(b) jputjjpd vej ,ayG mjid epuay jLgGffspy rpwgghf njhopwgl cjTfpdwJ?

(c) irffps Xlbdu jdJ ifapdhy jLgGffkgpia (Brake lever) ,OfFkNghJ jiyikKryjjpdhy (Master pistion) jputjjpd kJ gpuNahfpffggLk mKffk $1.5 x 10^6$ Pa vdpdz jiyik Kryjjpdhy jputjjpd kJ gpuNahfpfggLk tpir F lf fhzf.

(d) (i) jLgGf fkgpapYss Gsspa ,y njhopwgLk tpir $\mathbf{F_a}$,d jpiria njspthf Fwpj J **F**, $\mathbf{F_a}$,wF ,ilapyhd njhluig vOJf.

(ii) $\mathbf{F_b}$,d gUkidf fhzf. (Njitahd J}uqfs cUtpy fhllgglLssd. **F**, $\mathbf{F_b}$,wF ,ilggll nrqFjJjJ}uk 18cm)

(e) (i) jputjjpdhy Jiz Kryjjpd kJ cQwwggLk mKffk ahJ?

(ii) Jiz Kryjjpd (Slave pistion) kJ gpuNahfpffggLk tpiriaf fhzf.

(f) jLgGj jpzLfSfFkz (brake pads) jLgG jlbwFk (Brake disc) ,ilapyhd cuhaTfF zfk 0.5 vdpd jLgGj jlbd kJ jLgG jpzLfs mOjJk NghJ xtnthU jpzbd (pads) tpisthfTk jlbd kJ jhfF cuhaT tpiriaf fhzf.

(g) rpyYk mjDld ,izej #oYk jLgGjjlLk (spinning Brake disc) xNu mrrpy #oyfpdwd. jLgGj jpzbwFkz RoYk jLgG jlbd mrrpwFk ,ilapyhd J}uk 6cm. rpyypdJkz jLgGjjlbdJk RoYk mrRggwwpa rljJt jpUggk $0.12 kgm^2$, MFk. jLgig gpuNahfpfFk NghJ rpyyhdJ 1sec ,y XatpwF tUfpwJ.

(i) jLgig gpuNahfpfFk NghJ RoYk jlby gpuNahfpffggLk cuhaT KWffjij fhzf. (,affk KOtJk cuhaT tpir khwhky cssJ vdf nfhsf)

(ii) jLgG gpuNahfpff Kd rpyypd Nfhzffjp ahJ?

(iii) jLgG gpuNahfpffggll gpd vjjid Rowrpfspd gpd rpyY XatpwF tUk ($\pi = 3$ vdf nfhsf)

(iv) XatpwF tuKd VwgLjjggLk rpyypd Rowrpfspd vzzpfifia Fiwff rpyypy eu vdd khwwjijr nratu?

2) gpdtUk gejpia thrpjJ fNo NflfgglLss tpdhffSfF tpil vOJf.

rhjhuz kdpj fhjpdhy 20 kHz ,wFk mjpfsthd mjpuntzizf nfhzl xypmiyfisf Nflf Kbtjpyiy. ,it fopxypmiyfs vd mioffggLk. etd njhopwJiwapy nghUlfspy css FiwghLfis fzlwpa fopxypgadgLjjggLfpdwJ. fopnahypmir gpujy (Ultra sound Scanning) cgfuzjjpd Kffpa $whf mKffkpd %ynghUspd tll tbt jlL fhzggLfpdwJ. ,jjlbwF FWfNf MlNyhll Nthywwsit gpuNahfpggjd %yk mjid typej mjputpwF clgLjjggLfpdwJ. nghJthf MlNyhll kpdKjypd mjpuntz MdJ jlL cau trrjJld mjpUk tiu nrggQ nraaggLtjd %yk rfjp kpff fopnahypfs gpwggpffggLfpdwd. ,it

nghUlfspD}lhf nryYk NghJ mtwwpd xypmiyapd ,affjij vjpufFk Mwwy mt clfjjpwFupa xypmiyjjil (acoustic impedence) (Z) vd mioffggLfpdwJ.

$Z = \rho c$ MFk. ,qF Z – Clfjjpwfupa xypmiyjjil› p - Clfjjpd mlujjp› c – Clfjjpy fo xypapd Ntfk

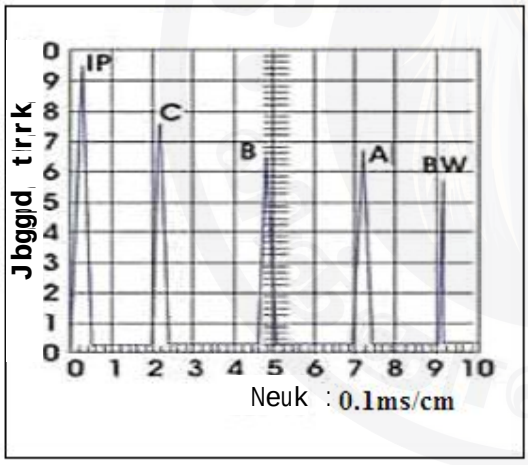
fopnahyp miyfs nttNtW Clf ,ilKfqfspy› vyiyfspy gFjpahf njwpggilfpdwJ. tspapdJ xypmiyjjil kpf Fiwthjyhy tsp – Clf ,ilKfjjpy xypjnjwpgG cauthf fhzggLk. fopnahypia gadgLjjpg nghUlfis MaT nraAKd nghUspd Nkwgupggpy ,izfFk vznza giria (Couping gel) Grpa gpddNu fopnahypis gpwggpfFk cgfuzjij khWfljjpia mjd Nky itff NtzLk. ,jdhy mjpfsT fopnahypapd rfjp MaTfFlgLjjggLk nghUspDs nryYk.

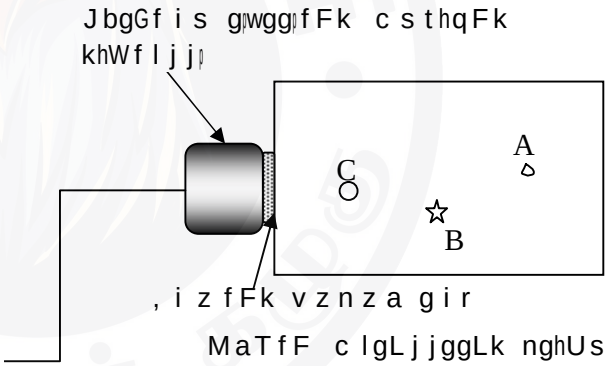
Clf ,ilKfjjpy xyp njwpgGf Fzfk R gpdtUkhW juggLk.

,qF Z_1 - Clfk 1 ,d xypmiyjjil

Z_2 Clfk 2 ,d xyp miyjjil

$$R = \left[\frac{[Z2 - Z1]}{[Z1 + Z2]}\right]^2$$





jddfjNj FiwghLfis nfhzl nghUs kJ khW fljjpahdJ (Transducer probe) fopnahyp JbgGffis nrYjjp nttNtW Clf ,ilKfqfSfF nrdW ksjnjwpggileJ› kzLk khWfljjpia milej Neujij fzpggjwfhd gjpTfs fNjhlLffjpu mitt fhlbapy fhlrpggLjjggllssij cU fhlLfpdwJ. NtW MaT KiwfSld xggpLk NghJ› fopnahyp MaT KiwahdJ nghUis (Clfjij) ghjpffhJ› jqfwwJ› tpidjjpwd $baJ› Neujij kprrggLjjf $bajhFk.

(a) (i) fopxypapd mjpuntz ahJ?

(ii) vej egpejidapd fo mKffkpdjlL (Piezoeleectric dise) cau trrJld mjpUk?

(iii) khWfljjpapd (transducer probe) njhopwghL ahJ?

(b) (i) Clfk xdwd xymiy jilia (acoustic impedance) jukhdfFk fhuzfs vit?

(ii) tsahdJ Vd ,oT xy miyjjiliaf (acoustic impedana) nfhzlJ?

(iii) xymiy jilad (acoustic impedance) S.I myif Fwggl Lf. (mbggil myFj njhFjay Fwggl Lf)

(c) (i) khWfljjia nghUsd Nkwgugg d kJ itggjwF Kd ,izfFk vznza giria Nkwgugg d kJ GRtJ Vd mtrakhdJ?

(ii) tsl ,ilKfk ,dw KidfF Kid xdWld xdW ,izffggll ntssp nghd Nrujjr rlljjy ntssl – nghd ,ilKf xyjnjwgGfFzfk (R) lf fhzf. ntssp nghd mlujjfs KiwNa 10, 000 kgm^{-3}, 20, 000 kgm^{-3}, ntssp nghddy foxyad Ntfqfs KiwNa 4, 000 ms^{-1}, 3, 000 ms^{-1} MFk.

(d) fNjhlL fju miyTfhlbad fhlrggLjjyy gy JbgGfs fhzggLtJ Vd vd tsfFf.

(e) NkNy fhllggll fhlrggLjjy jiuad xtnthU nrdukwwUk (xtnthU guTk) 0.1 kyyl nrffdfis FwggNjhL xtnthU guTk ehdF rkguTfshf guffgglLssd. (cUit ghuff)

cUtly IP vdgJ MukgjJbgigAk› BW vdgJ (Clfjjd) nghUsd vyiy ,ilKfjjy njwggilej JbgigAk Fwffdwd. ,t Clfjjy foxyad fj 3000ms^{-1} MFk.

(i) MukgjJbgG (IP) vtthW jiuay Njhdwanjd tsfFf.

(ii) foxy Clfjjd KdRtuy ,UeJ gdRtu tiu nryy vLjj nkhjj Neuk ahJ?

(iii) MaTfF clgLjjggll Clfjjd› esk ahJ?

(iv) A, B FiwghLfSfF ,ilggll filjJ}ujijf fhzf.

(f) (i) fonahyia gadgLjj nghUsfis MaTfF clgLjjyy css ,U mD$yqfisf $Wf.

(ii) Nkw$wggll MatwF kdfhej miyfs gadgLjJtjy css ,lughL ahJ?

3) fzzyUeJ NtWgll J}uqfsy css nghUlfsd njsthd tkgqfis tojjiuay tornraaf $ba jwid fz nfhzLssJ. czikay tontzglyjjdJk fztyiyadJk NrukhdNk tkgjij cUthfFfdwJ. tontzglykhdJ CLfhlLk Xu addy Mf ,UggJld› tsl rhughf cau KwTrRlb cilajhfTk cssJ. ,jid eiyjj FtajJ}ujij nfhzl FtT tyiyahf fUjyhk. mNj Ntis fztyiyad FtajJ}ujij gru jirfsd cjtadhy khwwyhk. ,ttisT jddikT vd mioffggLk. tojjiuay NjhdWk ,U tkgqfis NtWguujjwa tojjiuay mtwwwF ,ilggll J}uk Mff FiwejJ 50 μm Mf ,Ujjy NtzLk.

(a) (i) fzzd vggFjay xsffju mjf tyfYfF clgLfdwJ? fhuzk jUf.

(ii) jddikT vdwhy vdd?

(b) tpontzglyjjpdJk> rhjhuz (gruj irfs jsueje piy) epiyapYss fz tpyiyapdJ nkhjj tY+50 D (ijnahjju)

(i) fz tpyiyfFk tpojjpiufFk ,ilggll J}uk ahJ?

(ii) fz zpyUeJ 25cm J}ujjpYss nghUlfis njspthf Nehffj Njitahd ,t tpyiyjnjhFjpapd tY ahJ?

(iii) tpontzlyjjpd tY +44 D vdpd (b) (ii) ,y Fwpggpll epiyapy fz tpyiyapd Ftpa esjijf fzpff.

(iv) gpdtUk epiyfSfF fz tpyiyapd tbtjij tiuf.

- fz jsuej epiyapy css NghJ
- fz Guz jdikAld css NghJ

(c) FWkghuitAila egupd Nraikg Gsspl 250 cm mz ikgGsspl 15 cm MFk.

(i) rhjhuz fzzpd Nraikg GsspfFk> FiwghLila fzzpd Nraikg GsspfFk xspffju glk tiuf.

(ii) ,eegu J}ugnghUis njspthf ghuggjwF mzpa Ntzba %fFf fzzhbapd tYitf fzpfFf.

(iii) ,eegu ,k %fFf fzzhbia mzpeJss NghJ mtuJ mzikg Gsspl ahJ?

(iv) ,k %fFffzzhbia mzpeJss NghJ mtuJ ghuit trR ahJ?

(v) ,eegu ,k%fFf fzzhbia mzpeJss epiyapy ,tuhy NtWgLjjpg ghufff$ba ,U GsspfSfF ,ilggll ,opTj J}uk ahJ?
(fz tpojJ}uk 2cm vdfnfhsf.)