Time - 3 Hrs.

D₁G
EME&EM

Full Marks : 80
Pass Marks : 26

Answer from both groups separately and in sequence as per

direction given in each case in own words.

nksuksa xjqiks ds iz/ku dk mÙkj vyx&vyx] Øeokj iR;sd xqi esa fn;s x;s

funZsk ds vuqlkj vius 'kCnksa esa nsaA

***All question of Q.No.1** of **each Group-A and B** are compulsory.*

iR;sd xqi&A ,oaB l siz/u l aÁ 1 ds lHkh iz/u vfuok;Z gaA

The figures in right hand margin indicate full marks.

ik'oZ ds vad iw.kkd ds lwpd gaA

GROUP-A [Mechanical Portion]

1.(A) Select correct alternative of each of the following :- **1x5=5**

lgh fodYi dk p;u djsa%

(i)   Flux commonly used in brazing is

         (a)   Zince chloride

         (b)   Ammonium chloride

P.T.O.

(c)   Resin mixed with alcohol

(d)   borax.

cfUx esaiz,Dr ^[yDI ~lk/kkj.kr;kgksrk gS&

(a)   ftad DykjkbM

(b)   vekfu;e DykjkbM

(c)   vYdksgy fefJr jftu

(d)   ckjSDl A

(ii)   Intensive property of a thermodynamic system is

(a)   dependent upon mass

(b)   independent of mass

(c)   dependent upon energy

(d)   dependent upon both mass and energy.

Å"ekxfrd fudk; esal?ku xqk/ke Zgksrk gS&

(a)   nzO;eku ij fuHkZj

(b)   nzO;eku IsLora=

(c)   ÅtkZ ij fuHkZj

(d)   nzO;eku vkSj ÅtkZnksuksaij fuHkZjA

(iii)   Function of an 'Economizer' in a boiler is :

(a)   to make the boiler cheaper

(b)   to use the steam again and again

(c)   to utilize heat of flue gases

(d)   all of the above.

,d C;kyj esabdksuksekbtj dk dk;Zgksrk gS&

(a)   bl sl Lrk cukuses

(b)   ckjckj ok"i dk iz;kx djusesa

(c)   ?kuezkxZdh xSlksadh Å"ek dk iz;kx djusesa

(d)   mijksDr lHkhesaA

(iv)   Guages are used to :

(a)   measure length

(b)   measure angular distance

(c)   check dimensional accuracy

(d)   all of the above.

^xst* dk iz,kx gksrk gS&

(a) yEckbZ ekius ea

(b) dksŃkh; nwjh ekius ea

(c) vk;ke dh ;FkkFkZrk tkpus ea

(d) mijksDr lHkh eaA

(v) Reciprocating motion of piston is converted to rotary motion by :

(a) piston and crank mechanism

(b) cylinder and piston mechanism

(c) flywheel and crank mechanism

(d) connecting rod and crank mechanism.

fiLVu dh i'pkxxfr dks?kwkhZxfr eacnyk tkrk gS&

(a) fiLVu vkSj ØSd ;a=jpuk }kjk

(b) fl fyUMj ,oafiLVu ;a=&jpuk }kjk

(c) ¶ykbZ0ghy ,oaØSd ;a= ljpuk }kjk

(d) dufDVx jM ,oaØSd ;a= ljpuk }kjkA

(B) Write True for correct statement and False for wrong statement : **1x5=5**

lR; dFku dsfy, lR; ,oavlR; dsfy, vlR; fy[ka&

(i) 2-stroke engine has two power strokes in one revolution of crank.

f}&i?kkr batu eaØSd ds,d ifjHke.k eanks'kfDr i?kkr gksrh gA

(ii) Primary function of mountings on a boiler is to provide safe working of the boiler.

,d C;kyj ea^ekmfUVx* dk iz/kku dk;Zml lqjf{kr <ax ls dk;Z djkuk gksrk gA

(iii) Crowning of a pulley is done to prevent a belt on it from running off the pulley.

f?kjuh dk Økmfux ml ij p<+iV~Vsdksf?kjuh NkM+usls jksdusea gksrk gA

(iv) Forge welding is basically a fusion welding.

QkstZofYMax cfu;knh :i ls¶;wtu ofYMax gA

(v)   Welding of steel using oxidising flame increases the strength of steel.

vkWlhdkjd ykS l s LVhy dks ofYMax djus l s ml dh etcwrh c<+tkrh gA

2.   **Answer *any two* questions :**   **5x2=10**

fdUghanks dk il uka cls mÙkj na%

(a)   Differentiate a 2-stroke and a 4-stroke engine.

f}?kkr ,oa prq?kkr batu eafoHkn djA

(b)   What are the selection criteria of gear, belt and chain drive? Explain in brief.

fx;j] iVVk ,oa pu pkyu dsp;u dh dlksfV;; D;k gSA o.ku djA

(c)   Classify boilers and name some of them.

C;kyjka dk oxhdj.k djs vksj mueals cdN dsuke fy[kA

(d)   Write differences between soldering and brazing.

lkYMfjax ,oa cftax ds vUrjkadks fy[kA

3.   **Answer *any two* questions :**   **10x2=20**

fdUghanks dk il uka cls mÙkj na%

(a)   What are the different type of flames used in welding by oxy-acelyline gas ? Explain them with uses.

vkWlh&,flfVfyu xS }kjk ofYMax dsfy, fofHkUu idkj dh ykS½yiVVk dk mudsiz;kx l fgr 0;k[;k djA

(b)   Describe with neat sketch a micrometer. What are its applications ?

Li"V fp= }kjk ,d ekbØkehVj dk o.ku djA blds D;k&D;k iz;kx gS\

(c)   Define welding. Explain arc welding on the basis of types of electrodes.

P.T.O.

ofYMax dksifjHkkf"kr djsA byDVWM+ dsidkj ij vkèkkfjr ofYMax dk o.kZu djsA

(d) Describe with P-V diagram the working of a 4-stroke Diesel engine.

prqPkkLr Mhty batu dh dk;Z&iz.kkyh dk nkc vk;ru vkjs[k l fgr o.kZu djsA

GROUP-B [Engineering Material]

1. Select correct alternative of each of the following :- **1x10=10**

lgh fodYi dk p;u djsa%

(i) The rocks which are formed from molten magma are called :

   (a) sedimentary rocks

   (b) Igneous rocks

   (c) Metamorphic rocks

   (d) stratified rock.

fiNysgq eXek lscuh pV~Vkuadgykrh gS%

(a) volknh ;k ryNVh pV~Vkua

(b) vkXus pV~Vkua

(c) dk;kUrfjr pV~Vkua

(d) Lrjh; pV~VkuA

(ii) The size of modular bricks is :

   (a) 22.5 cm x 10 cm x 8.5 cm

   (b) 19 cm x 9 cm x 9 cm

   (c) 22.5 cm x 9 cm x 8 cm

   (d) None of the above.

ekWMyj bZV dk vkdkj gkrk gS&

(a) 22.5 cm x 10 cm x 8.5 cm

(b) 19 cm x 9 cm x 9 cm

(c) 22.5 cm x 9 cm x 8 cm

(d) mijkDr esal sdkbZughA

P.T.O.

(iii) The main ingredient of a good quality brick earth is:

(a) magnesia

(b) alumina

(c) silica

(d) All of the above.

vPNh bV cukus okyh eVh dk eq[; vo;o gS%

(a) eSuhfl;k

(b) ,Y;qfeuk

(c) fl fydk

(d) mijkDr I Hkh A

(iv) The property by virtue of which lime sets under

water is known as :

(a) slacking

(b) bulking

(c) hydraulicity

(d) calcining.

pwus dk og xq.k ftl ds dkj.k og ikuh dh ekStmxh es

tedj dBksj gks tkrk gS] ml s tkuk tkrk gS%

(a) cq>kuk

(b) Qqyuk

(c) tyh; xq.k

(d) QqdukA

(v) Ordinary portland cement achieves about 70%

its final strength in :

(a) 21 days

(b) 28 days

(c) 14 days

(d) None of these.

I k/kkj.k iksVZySM I heaV viuh vfre 'kfDr dk 70% iklr

dj ysrh gS%

(a) 21 fnuksa ea

(b) 28 fnuksa ea

(c) 14 fnuksa ea

(d) buea l s dksbZ ughaA

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(vi)   Knots in timber is caused by defects due to :

(a)   fungi

(b)   insects

(c)   natural forces

(d)   Seasoning.

ydMh eaxkB nkŔk fuEu ds dkj.k gkrk gS%

(a)   QUtkbZ

(b)   dhM+

(c)   ikdfrd cy

(d)   i dkukA

(vii)   The commonly used the base of oil paints is :

(a)   red lead

(b)   iron oxide

(c)   White lead

(d)   Whiting.

rsy okys iVaua ik;% vk/kkj dk mi;kx fd;k tkrk gS%

(a)   yky lhl k

(b)   ykŒj vkDlkbM

(c)   l Qsn lhl k

(d)   0gkbfVaxA

(viii)   The percentage of carbon in wrought iron is :

(a)   2 to 3.5%   (b)   0 to 0.25%

(c)   0.5 to 0.7%   (d)   0.15 to 1.5%

fi Vok; ykgs ea dkcZu dh ek=k gkrh gS%

(a)   2 to 3.5%

(b)   0 to 0.25%

(c)   0.5 to 0.7%

(d)   0.15 to 1.5%

(ix)   Brass is an alloy of :

(a)   copper, zinc and minor percentage of other element.

(b)   copper, tin and minor percentage of other element.

(c)   copper, nickel and minor percentage of other element.

(d)   none of these.

P.T.O.

ihry ,d fefJr /kkrqgS&

(a)   rkqck] tLrk rFkk vU; rRo dk Fkk\Mh ifr'kr

(b)   rkqck] fVu rFkk vU; rRo dk Fkk\Mh ifr'kr

(c)   rkqck] fudy rFkk vU; rRo dk Fkk\Mh ifr'kr

(d)   buea I s dkbZ ughaA

(x)   Rubber is a **..................** of heat.

(a)   good conductor

(b)   bad conductor

(c)   (a) and (b) both

(d)   none of these.

jcj rki dk ,d **.....................** gA

(a)   vPNk pkyd

(b)   dqpkyd

(c)   (a) rFkk (b) nksuka

(d)   buea I s dkbZ ughaA

2.   Answer *any two* questions :   **5x2=10**

fdUghasnks i*Zuka ds mÙkj na%*

(a)   What are the main classification of rocks ?

pV~Vku dse q[; oxhZdj.k dku&dkS I sgS\

(b)   Why is frog provided in the brick ?

bZV ea ÝkWk D;ksafn;k tkrk gS\

(c)   Compare the merits and demerits of quick lime
and slaked lime.

vucq>k pwuk rFkk cq>k pwuk dsxqkksxqk dh rqyuk djaA

(d)   What is the difference between cast iron and
wrought iron ?

<yok; ykgk rFkk fiVok ykgk ea vUrj D;k gS\

3.   Answer **any two** questions of the following :   **10x2=20**

*fuEukafdr ea I sfdUghasnks i*Zuka ds mÙkj na%*

(a)   Describe in detail the working system of a 'bug mill'
giving a neat sketch.

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^cx ehy* dk ,d lkQ fp= cukdj bldh dk;Z izkkyh dk o.kZu djsA

(b) Discuss the methods adopted for preservation of timber.

ydMh dslj{k.k grqviuk;h tkusokyh fof/k;ksadk o.kZu djsA

(c) What is an alloy ? Discuss various copper alloys.

fefJr /kkrqD;k gS\ rkck dsfofHkUu fefJr /kkrqvksadk o.kZu djsA

(d) What are the main ingredients of oil paints ? Describe the working of each component.

rsy ilV dseq[; ?kVd D;k gSa\ iR;sd ?kVd dsdk;Zdk o.kZu djsA

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