	Δ	2014 प्रश्नपुस्तिक	СОDE : IO5 п क्रमांक
		प्रश्नपुास्तका BOOKL चाळणी परीक्षा	ET NO. एकूण प्रश्न : 80
100 	: 3 (तोन) तास	यत्र आभयात्रिक। 	एकूण गुण : 200
(1)	सदर प्रश्नपुस्तिकेत 80 अनिवार्य प्रश- आहेत किंवा नाहीत याची खात्री करू	न आहेत. उमेदवारांनी प्रश्नांची उत्तरे लिहिण्यास सुरुव जन घ्यावी. असा तसेच अन्य काही दोष आढळल्यास	ात करण्यापूर्वी या प्रश्नपुस्तिकेत सर्व प्रश्न स ही प्रश्नपुस्तिका समवेक्षकांकडून लगेच
(2)	बद लून घ्यावी. आपला परीक्षा-क्रमांक ह्या चौकोनांत	परीक्षा-क्रमांक	
	न विसरता बॉलपेनने लिहावा.	केंद्राची संकेताक्षरे	शवटचा अक
(3)	वर छापलेला प्रश्नपुस्तिका क्रमांक तुम	मच्या उत्तरपत्रिकेवर विशिष्ट जागी उत्तरपत्रिकेवरील स्	गूचनेप्रमाणे न विसरता नमूद करावा. 🛛 🕅
(*)	उत्तरांपैकी सर्वात योग्य उत्तराचा क्रमां उत्तरक्रमांक नमूद करताना तो संबंधिक काळ्या शाईचे बॉलपेन वापरावे, पं	क उत्तरपत्रिकेवरील सूचनेप्रमाणे तुमच्या उत्तरपत्रिकेवर त प्रश्नक्रमांकासमोर छायांकित करून दर्शविला जाईल पेन्सिल वा शाईचे पेन वापरू नये.	र नमूद करावा. अशा प्रकारे उत्तरपत्रिकेवर ल याची काळजी घ्यावी. ह्याकरिता फक्त
(5)	सर्व प्रश्नांना समान गुण आहेत. यास्त वेगाने प्रश्न सोडवावेत. क्रमाने प्रश्न प्रश्नाकडे वळावे. अशा प्रकारे शेव परतणे सोईस्कर ठरेल.	तव सर्व प्रश्नांची उत्तरे द्यावीत. घाईमुळे चुका होणार सोडविणे श्रेयस्कर आहे पण एखादा प्रश्न कठीण व टच्या प्रश्नापर्यंत पोहोचल्यानंतर वेळ शिल्लक राहिल्	नाहीत याची दक्षता घेऊनच शक्य तितक्या गटल्यास त्यावर वेळन घालविता पुढील यास कठीण म्हणून वगळलेल्या प्रश्नांकडे
(6)	उत्तरप त्रिकेत एकदा नमूद केलेले उत्तर	खोडता येणार नाही. नमूद केलेले उत्तर खोडून नव्याने उ	उत्तर दिल्यास ते तपासले जाणार नाही.
(7)	प्रस्तुत परीक्षेच्या उत्तरपत्रिकांचे म तसेच ''उमेदवाराने वस्तुनिष्ठ बहु नमूद करावीत. अन्यथा त्यांच्या करण्यात येतील''.	मूल्यांकन करताना उमेदवाराच्या उत्तरपत्रिकेतीत पर्यायी स्वरूपाच्या प्रश्नांची दिलेल्या चार पर्याया उत्तरपत्रिकेत सोडविलेल्या प्रत्येक चार चुकीच्य	ल योग्य उत्तरांनाच गुण दिले जातील. पैकी सर्वात योग्य उत्तरेच उत्तरपत्रिकेत या उत्तरांसाठी एका प्रश्नाचे गुण वजा
ह्या पर्र	- 1 प्रश्नपत्रिकेसाठी आयोगाने वि शिक्षाकक्षात उमेदवाराला परीक्षेस त/प्रती, किंवा सदर प्रश्नपुस्टि	ताकीद हित केलेली वेळ संपेपर्यंत ही प्रश्नपुस्तिका ाठी वापरण्यास देण्यात येत आहे. ही वेळ तकेतील काही आशय कोणत्याही स्वरू	आयोगाची मालमत्ता असून ती ए संपेपर्यंत सदर प्रश्नपुस्तिकेची पात प्रत्यक्ष वा अप्रत्यक्षपणे

पुढील सूचना प्रश्नपुस्तिकेच्या अंतिम पृष्ठावर पहा

तरीही अशा व्यक्तीविरूद्ध उक्त अधिनियमानुसार कारवाई करण्यात येईल व दोषी व्यक्ती शिक्षेस पात्र होईल.

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कच्च्या कामासाठी जागा / SPACE FOR ROUGH WORK

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3 A 105 1. The rate of change of bending moment is equal to ______ at the section. (2)shear force deflection (1)loading (3) (4) slope 2. At a certain speed, revolving shaft tends to vibrate violently in transverse directions. The speed is known as _____. whirling speed (2) critical speed whipping speed (4) (1)(3)all of these 3. In SI units 1 tonne of refrigeration is equal to : 2.52 kW 3.52 kW 4.52 kW 5.52 kW (1)(2)(3) (4) 4. CPM and PERT techniques are used for : (1) layout planning (2) financial management (3) executing a new project increasing productivity (4) 5. Angle of friction is : Angle made by resultant reaction with horizontal (1)(2)Angle made by resultant reaction with normal (3)Angle made by normal reaction with force of friction None of these (4)6. A linear programming problem is shown below : Maximize 3x + 7ySubject to $3x + 7y \le 10$ $4x + 6y \le 8$ $x, y \ge 0$ It has exactly one optimal solution (1)an unbounded objective function (2)exactly two optimal solutions (4)infinitely many optimal solutions (3)

- 7. Consider the following statements :
 - (a) MRP system is useful for dependent demand items.
 - (b) MRP reduces inventory cost.
 - (c) A Bill of Material, (BOM) is a list showing materials and their quantities required to produce the end item.
 - (d) Master Production Schedule (MPS), bill of materials and inventory status files are three basic inputs of an MRP system.

Of these statements :

- (1) (a), (c) and (d) are true (2) (a), (b) and (c) are true
- (3) (a), (b), (c) and (d) true (4) (b), (c) and (d) are true
- 8. Shape factor of a plane surface about itself is :
 (1) 1 (2) zero (3) 0.5 (4) 0.75
- 9. In case of Mohr's circle, the radius R is :

(1)	$\sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + \tau^2 x y}$	(2)	$\sqrt{\left(\frac{\sigma_x + \sigma_y}{2}\right)^2 + \tau^2 x y}$
(3)	$\sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 - \tau^2 x y}$	(4)	$\sqrt{\left(\frac{\sigma_x + \sigma_y}{2}\right)^2 - \tau^2 x y}$

- **10.** The shear force at certain section of a beam is stated to be zero. The bending moment at that section will be :
 - (1) minimum (2) maximum
 - (3) either minimum or maximum (4) none of these
- **11.** The most efficient cycle is :
 - (1) Carnot Cycle (2) Rankine Cycle
 - (3) Brayton Cycle (4) Vapour Compression Cycle

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12. A fluid is a substance which deforms continuously under the action of :

- (1) Shearing Force (2) Tensile Force
- (3) Compressive Force (4) None of these

13. The total annual inventory cost includes the following costs :

- (1) Carrying cost, ordering cost and setup cost
- (2) Carrying cost and setup cost
- (3) Production cost, carrying cost, ordering cost and setup cost
- (4) Production cost, carrying cost and ordering cost

14. A slider moves with uniform velocity v on a revolving link of length r with angular velocity ω . The Coriolis acceleration component of a point on the slider relative to a coincident point on the link is equal to :

- (1) $2r\omega$ parallel to the link (2) $2\omega v$ perpendicular to the link
- (3) $2r\omega$ perpendicular to the link (4) $2\omega v$ parallel to the link

15. Which of the following forecasting methods is also called "Extrinsic Method" ?

- (1) Regression Method
- (2) Time Series Analysis Method
- (3) Weighted Moving Average Method
- (4) Exponential Smoothing Method

16. Molten metal is transported down into the mould by the _____.

(1)	Gate	(2)	Sprue	(3)	Runner	(4)	Riser
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- **17.** In a spring mass system, if the mass is halved and the spring stiffness is doubled, the natural frequency is ______.
 - (1) halved (2) doubled (3) unchanged (4) quadrupled

SPACE FOR ROUGH WORK

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(1)

(2)

A flux is used in brazing to :

Improve appearance of finished bond

Provide filler material for brazing

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	(3)	Prevent oxidati	on an	d remove ri	ust				
	(4)	Help heat flow	for st	ronger bonc	ł				
19.	In n turb	atural convection ulent is :	the s	ignificant n	umbe	r whic	ch decides wheth	ver the	flow is laminar or
	(1)	Reynold's Num	ber		(2)	Nus	selt Number		
	(3)	Grashoff's Nun	nber		(4)	Prar	ndtl Number		
20.	The	shear strength of	f even	materials t	ends (to be a	about	_ their	tensile strength.
	(1)	half	(2)	equal		(3)	double	(4)	one third
21.	A ro	stating shaft with	stead	ly bending	loads	must	be designed aga	inst	·
	(1)	fatigue failure	(2)	static failu	are	(3)	both these (4)	none	e of these
	()								
22.	The	linear velocity of at A on the same	a poi link is	nt B on a lir	nk rota	ating a	it an angular velo	ocity ω	relative to another
22.	The poin (1)	linear velocity of at A on the same ω ² * AB	a poi link is (2)	nt B on a lir ; : ω * AB	ık rota	ating a	at an angular velo ω * (AB) ²	ocity ω (4)	relative to another $\frac{\omega}{AB}$
22.	The point (1)	linear velocity of at A on the same ω ² * AB e stream functior	a poir link is (2) η is φ=	nt B on a lir : ω * AB = 2 <i>xy</i> then t	hk rota	ating a (3) ocity	at an angular velo ω * (AB) ² at a point (1, 2) is	ocity ω (4) s equa	relative to another $\frac{\omega}{AB}$ I to :
22.	The point (1) If th (1)	linear velocity of at A on the same $\omega^2 * AB$ e stream functior 2	a poir link is (2) n is φ= (2)	nt B on a lir : ω * AB = 2xy then t 4	hk rota	ating a (3) ocity (3)	at an angular velo $\omega * (AB)^2$ at a point (1, 2) is $\sqrt{20}$	ocity ω (4) s equa (4)	relative to another $\frac{\omega}{AB}$ l to : 16
22. 23. 24.	 The point (1) If the (1) Mouther the second second	linear velocity of at A on the same ω ² * AB e stream functior 2 alding is carried o	a poir link is (2) n is φ= (2) out in	nt B on a lir ω * AB = 2xy then t 4 moulding b	he vel	ating a (3) ocity (3) called	at an angular velo $\omega * (AB)^2$ at a point (1, 2) is $\sqrt{20}$	ocity ω (4) s equa (4)	relative to another <u>ω</u> AB l to : 16
22. 23. 24.	(1) The point (1) If th (1) Mou (1)	linear velocity of at A on the same ω ² * AB e stream function 2 alding is carried of Cores	a poir link is (2) n is φ= (2) out in (2)	nt B on a lir ω * AB = 2 <i>xy</i> then t 4 moulding b Pots	he vel	ating a (3) ocity (3) called (3)	at an angular velo $\omega * (AB)^2$ at a point (1, 2) is $\sqrt{20}$ Flasks	(4) (4) s equa (4) (4)	relative to another <u>ω</u> AB l to : 16 Cavities
 22. 23. 24. 25. 	 The point (1) If th (1) Mout (1) Current filled 	linear velocity of at A on the same ω ² * AB e stream functior 2 alding is carried of Cores rently, the need fo d mainly by :	a poir link is (2) n is φ= (2) out in (2) or a si	nt B on a lir ω * AB = 2 <i>xy</i> then t 4 moulding I Pots ngle neutral	he vel	(3) (3) ocity (3) called (3) at for	at an angular velo $\omega * (AB)^2$ at a point (1, 2) i $\sqrt{20}$ Flasks Computer Aided	city ω (4) s equa (4) (4) l Desig	relative to another $\frac{\omega}{AB}$ I to : 16 Cavities gn programming, is

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- 26. Fillers like asbestos are used in plastics to :
 - (1) Enhance the strength and hardness
 - (2) Improve heat and corrosion resistance
 - (3) Reduce the production cost
 - (4) All of these

27. A stone is released from a certain height and it takes 5 seconds to reach the ground. If the stone is stopped after 3 seconds and released, the total time the stone will be in the air is : (1)14 s 4 s 7 s (4) 5 s (2) (3) The total number of instantaneous centers of a mechanism having n links is : 28. $\frac{n(n-1)}{2}$ (2) $\frac{(n-1)}{2}$ (3) $\frac{n(n+1)}{2}$ (4) $\frac{(n+1)}{2}$ (1)29. The efficiency of carnot engine working between 800K and 400K is : 100% 0.5% None of these (1)(2)50% (3)(4)The heat treatment of carbon steel, consisting of austenitization, followed by slow cooling in 30. air is called as : Nitriding Tempering Quenching (1)(2)(3)(4) Annealing 31. Flow of a river can be measured by using : (1)Notch (2)Weir (3)Orifice Meter (4) Pitot Tube 32. Crater wear occurs on this part of the metal cutting tool : (1)Flank (2)Face (3)Base (4) Nose If ω is an imaginary cube root of unity, then $(1 + \omega - \omega^2)^7$ is equal to : 33. $128\omega^2$ $-128\omega^2$ -128ω (1)128ω (2)(3)(4) **SPACE FOR ROUGH WORK**

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34.	Sho	rt column is usu	ally defi	ned as one w	hose slend	lerness ratio is	less than	about
	(1)	2	(2)	5	(3)	8	(4)	10
35.	The	rmal diffusivity	is given	by :				
	(1)	$\alpha = \frac{\kappa}{\rho c_{\rm p}}$	(2)	$\alpha = \frac{\kappa \rho}{c_p}$	(3)	$\alpha = \frac{\rho c_p}{\kappa}$	(4)	$\alpha = \frac{c_p \kappa}{\rho}$
36.	In a	clock mechanis	sm, the h	nour and min	nute hand	s are connecte	ed by	gear train.
	(1)	simple	(2)	epicyclic	(3)	reverted	(4)	none of these
37.	<u>∂u</u> ∂t	$= c^2 \frac{\partial^2 u}{\partial x^2}$ represent	sents a :					
	(1)	Wave equatio	n					
	(2)	One - dimens	ional hea	at flow equa	tion			
	(3)	Two dimensio	onal heat	flow equati	on			
	(4)	Radio equatio	n					
38.	The	rank of $\begin{bmatrix} 4 & 0 \\ 0 & 3 \\ 0 & 0 \end{bmatrix}$	$\begin{bmatrix} 0 \\ 0 \\ 5 \end{bmatrix}$ is eq	ual to :				
	(1)	4	(2)	3	(3)	5	(4)	1
39.	The	maximum fluc	tuation o	of energy is	the			
	(1)	ratio of maxin	num and	l minimum l	kinetic ene	rgies		
	(2)	sum of maxim	num and	minimum k	inetic ene	rgies		
	(3)	difference of 1	maximui	n and minin	num kinet	ic energies		
	(4)	none of these						

40.	Renewable drill bushes are a type of						elements of jig design.				
	(1)	Clamping	(2)	Locating		(3)	Tool Settin	ng (4)	Tool Guiding		
41.	The	probability tha	t a stude	ent knows t	the co	rrect a	answer to a	multiple ch	oice question is $\frac{2}{3}$		
	If th	e student does i	not know	v the answe	r, ther	the st	tudent guess	ses the answ	er. The probability		
	of tl	ne guessed ansv	ver being	g correct is	$\frac{1}{4}$. C	liven t	that the stud	ent has ans	wered the questior		
	corr	ectly, the condi	tional p	robability t	hat th	e stud	lent knows	the correct a	answer is :		
	(1)	$\frac{2}{3}$	(2)	$\frac{3}{4}$		(3)	$\frac{5}{6}$	(4)	$\frac{8}{9}$		
42.	To t	ake longest pos	sible jur	np, an athle	et sho	uld m	ake an angle	e of :			
	(1)	60° with the g	ground		(2)	45° -	with the gro	ound			
	(3)	30° with the g	ground		(4)	Nor	ne of these				
43.	In a by	n internal expa	nding sł	noe brake, r	nore t	han 5	0% of the to	otal braking	torque is supplied		
	(1)	leading shoe			(2)	trail	ing shoe				
	(3)	leading as we	ell as trai	iling shoe	(4)	non	e of these				
44.	The	minimum and	maximu	m eigen val	ues of	the n	natrix $\begin{bmatrix} 1 & 1 \\ 1 & 5 \\ 3 & 1 \end{bmatrix}$	$\begin{bmatrix} 3\\1\\1 \end{bmatrix}$ are -2	and 6 respectively.		
	Wha	at is the other e	igen val	ue ?							
	(1)	5	(2)	3		(3)	1	(4)	-1		
45.	Rey	nolds Number i	is define	d as the rat	io of :						
	(1)	Inertia Force	to Visco	us Force		(2)	Viscous Fo	orce to Inert	tia Force		
	(3)	Inertia Force	to Elasti	c Force		(4)	Inertia Foi	rce to Gravi	ty Force		

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SPACE FOR ROUGH WORK

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46 .	A ba coefi	A ball is dropped from a height of 10 m to a surface which rebounds to a height of 2 m. The coefficient of restitution of the surface is :											
	(1)	$\sqrt{0.2}$	(2)	0.6		(3)	$\sqrt{0.5}$	(4)	0.8				
47.	The body	component of th y is known as	he acco	eleration di	rected ent.	towa	ards the centre	e of rotat	ion of a revolving				
	(1)	tangential	(2)	centripeta	1	(3)	coriolis	(4)	none of these				
48.	Whi	ch of the followi	ng ma	nufacturing	syster	ns ke	eps maximum	inventor	ry ?				
	(1)	Make to stock			(2)	Mak	e to order						
	(3)	Assemble to or	der		(4)	Engi	ineer to order						
49.	A si defle	A simply supported beam of span <i>l</i> carries a point load W at mid span. The downwar deflection under the load will be :											
	(1)	$\frac{Wl^3}{3 El}$	(2)	$\frac{Wl^3}{8 El}$		(3)	$\frac{Wl^3}{48 El}$	(4)	$\frac{5}{384} \frac{Wl^3}{El}$				
50.	Lase	r Beam machinir	ng is si	uitable for :									
	(1)	Metal Cutting	(2)	Heat Trea	tment	(3)	Welding	(4)	All of these				
51.	Stres	ss and strain are	linear	ly related by	y Hoo	ke's l	aw in the	r	egion.				
	(1)	plastic			(2)	elast	tic						
	(3)	both elastic and	d plast	ic	(4)	Neit	her elastic nor	plastic					
52.	Duri in th	ing drawing ope ne sheet metal co	ration mpone	in sheet me ent.	etal fo	rmati	on, the stresse	es tend to	cause				
	(1)	Bubbles	(2)	Wrinkles		(3)	Pits	(4)	Notches				
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53.	If	f(x) =	$x[\sqrt{x}]$	$-\sqrt{x}$ +	1],	then :

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- (1) f(x) is continuous but not differentiable at x = 0
- (2) f(x) is differentiable at x = 0
- (3) f(x) is not differentiable at x = 0
- (4) None of these

54. The general solution of the differential equation $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 0$ is : Where A and B are constants in the answers.

(1) $Ax + Bx^2$ (2) $Ax + B \log x$ (3) $Ax + Bx^2 \log x$ (4) $Ax + Bx \log x$

55. Taylor's Principle states that Go Gauge should always be so designed, that it will cover the ______ metal condition of as many dimensions as possible, in the same limit gauge.

(1)	Mean	(2)	Maximum	(3)	Minimum	(4)	Median	

56. Moment of Inertia of a Triangular section of base "b" and height "h" about its base is :

- (1) $\frac{bh^3}{3}$ (2) $\frac{bh^3}{36}$ (3) $\frac{bh^3}{12}$ (4) None of these
- **57.** Which is a more conservative and commonly used failure criterion for designing parts subjected to mean plus alternating stresses ?
 - (1) Soderberg line (2) Modified Goodman line
 - (3) Gerber parabola (4) All of these

58. If $x = r \cos\theta$, $y = r \sin\theta$ then $\frac{\partial r}{\partial x}$ is equal to : (1) $\sec\theta$ (2) $\sin\theta$ (3) $\cos\theta$ (4) $\csc\theta$

59. When the friction force helps the applied force in applying the brake, the brake is called as (1) self-locking (2) automatic (3) self-energizing (4) none of these

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The Coriolis component of acceleration is present in : 60.

(1)	four bar mechanism	(2)	scotch yoke mechanism
(3)	slider crank mechanism	(4)	none of these

- For flow along flat plate critical Reynolds number at which the transition from Laminar to **61**. Turbulent flow takes place is :
 - (3) $Re = 4 \times 10^5$ $Re = 5 \times 10^5$ Re = 2000 $Re = 5 \times 10^{-5}$ (1)(2)(4)

62. Manufacturing System is a system based on multi-operation machine tools, incorporating integrated computer control with associated support function and material handling.

- Flexible None of these (1)Flow (2) Fixed (3)(4)
- $1 \ 1 \ 1 \ -x$ The value of $\iint \int x dz dx dy$ is : 63. $0 y^2$ $\frac{8}{35}$ $\frac{3}{35}$ $\frac{4}{35}$ (2) (1) (3) (4)
- If frequency ratio is more than $\sqrt{2}$ in a vibration isolation system then for all values of damping **64**. ratio the transmissibility is
 - (1)less than unity (2) more than unity (3) equal to one (4) none of these
- 65. In Shearing operations on sheet metal, the operation in which the slug is the part and the rest is scrap is known as :

	(1)	Blanking	(2)	Punching	(3)	Slitting	(4) Bending	
66.	The	frequency o	f damped	vibrations is a	lways	the r	natural frequency.	
	(1)	equal to	(2)	more than	(3)	less than	(4) double	

SPACE FOR ROUGH WORK

 $\frac{6}{35}$

A

conditions, f(0) = 0, $\frac{df}{dt}(0) = 4$. The laplace transform of f(t) is given by :

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

68. Which static failure theory is not a safe theory to be used for ductile materials ?

- (1) maximum normal stress theory (2) maximum shear stress theory
- (3) distortion energy theory (4) all of these

69. The differential equation
$$\left(\frac{dy}{dx}\right)^2 + 5y^{1/3} = x$$
 is :

- (1) Linear of degree 2
- (2) Non linear of order 1 and degree 2
- (3) Non linear of order 1 and degree 6
- (4) None of these

70. In welding, the electrodes are coated with clay-like materials to :

- (1) Control the rate at which the electrode melts
- (2) Provide a shiny and clean finish over the weld
- (3) Create notches in the surfaces of the joining parts
- (4) None of these

71. A gear train in which axes of gears have motions are called as ______.
(1) epicyclic (2) simple (3) compound (4) reverted

 72. For saturated air :
 (1) WBT > DBT
 (2) DBT < WBT < DPT</td>

 (3) DBT > WBT > DPT
 (4) WBT = DBT = DPT

73. The diameter of shaft is increased from 30 mm to 60 mm, all other conditions remaining unchanged. How many times its torque carrying capacity increases ?

(1) 2 (2) 4 (3) 8 (4) 16

74.	For	lumped capacity l	heat a	nalysis Bic	ot num	ber m	ust be :		
	(1)	equal to 0.1	(2)	less than	0.1	(3)	0.1 < Bi < 1	. (4)	None of these
75.	If p surf	ure torsion is apprace due to	olied	to a piece	of clas	sroor	n chalk, it m	nay crack a	llong a 45° helical
	(1)	maximum shear	· stres	S	(2)	max	imum princi	pal stress	
	(3)	maximum tensil	e stre	SS	(4)	none	e of these		
76.	For	an Isothermal pro	ocess o	change in i	nternal	ener	gy is :		
	(1)	Work done	(2)	Zero		(3)	One	(4)	Heat transferred
77.	Con	sider the followin	ig stat	ements ab	out Cri	itical I	Path Method	(CPM) :	
	(a)	It is a method o	f proj	ect evaluat	tion				
	(b)	It uses four time	e estin	nates					
	(c)	It is a probabilis	tic me	ethod					
	(d)	It is a tool for m	anagi	ng large p	rojects				
	Of t	hese statements :							
	(1)	(a) and (b) are t	rue		(2)	(a) a	lone is true		
	(3)	(a), (b) and (d)	are tr	ue	(4)	(a), ((b), (c) and (c	d) are true	

- **78.** A medium force fit on a 75 mm shaft requires a hole tolerance and shaft tolerance, each equal to 0.225 mm and an average interference of 0.0375 mm. Determine the shaft dimensions with the basic hole standard :
 - Shaft low limit = 75.2625 mm
 Shaft high limit = 75.4875 mm
 - (2) Shaft low limit = 75.7625 mmShaft high limit = 75.8675 mm
 - (3) Shaft low limit = 76.0625 mm Shaft high limit = 76.1875 mm
 - (4) Shaft low limit = 75.000 mmShaft high limit = 75.225 mm

SPACE FOR ROUGH WORK

IO5

14

- **79.** Stoke's theorem connects :
 - (1) A line integral and a surface integral
 - (2) A surface integral and a volume integral
 - (3) A line integral and a volume integral
 - (4) Gradient of a function and its surface integral

80. COP of heat pump :

- (1) $1 + COP_{refrigerator}$ (2) $1 COP_{refrigerator}$
- (3) $1/COP_{refrigerator}$ (4) None of these

- 0 0 0 -

IO5

'सूचना — (पृष्ठ 1 वरून पुढे....)

- (8) प्रश्नपुस्तिकेमध्ये विहित केलेल्या विशिष्ट जागीच कच्चे काम (रफ वर्क) करावे. प्रश्नपुस्तिकेव्यतिरिक्त उत्तरपत्रिकेवर वा इतर कागदावर कच्चे काम केल्यास ते कॉपी करण्याच्या उद्देशाने केले आहे, असे मानले जाईल व त्यानुसार उमेदवारावर शासनाने जारी केलेल्या ''परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचे अधिनियम-82'' यातील तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षाच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.
- (9) सदर प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपल्यानंतर उमेदवाराला ही प्रश्नपुस्तिका स्वतःबरोबर परीक्षाकक्षाबाहेर घेऊन जाण्यास परवानगी आहे. मात्र परीक्षा कक्षाबाहेर जाण्यापूर्वी उमेदवाराने आपल्या उत्तरपत्रिकेचा भाग-1 समवेक्षकाकडे न विसरता परत करणे आवश्यक आहे.

नमुना प्रश्न

Pick out the correct word to fill in the blank :

Q. No. 201. I congratulate you ______ your grand success.

(1) for (2) at (3) on (4) about ह्या प्रश्नाचे योग्य उत्तर ''(3) on '' असे आहे. त्यामुळे या प्रश्नाचे उत्तर ''(3) '' होईल. यास्तव खालीलप्रमाणे प्रश्न क्र. 201 समोरील उत्तर-क्रमांक ''(3)'' हे वर्तुळ पूर्णपणे छायांकित करून दाखविणे आवश्यक आहे.

प्र. क्र. 201. (1) (2) (4)

अशा पद्धतीने प्रस्तुत प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाचा तुमचा उत्तरक्रमांक हा तुम्हाला स्वतंत्ररीत्या पुरविलेल्या उत्तरपत्रिकेवरील त्या त्या प्रश्नक्रमांकासमोरील संबंधित वर्तुळ पूर्णपणे छायांकित करून दाखवावा. ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.

कच्च्या कामासाठी जागा / SPACE FOR ROUGH WORK