



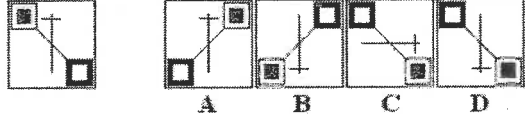
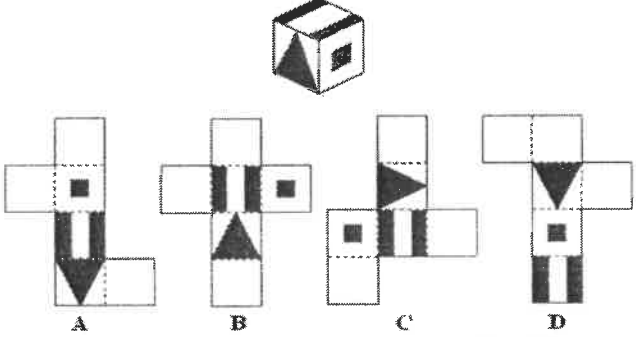
Non-Teaching Recruitment

Question Paper

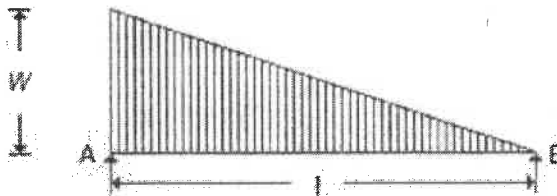
Name of the Candidate	:	
Application No.	:	
Name of the Post	:	Junior Technical Superintendent (Design)
Exam Level	:	Screening Test (Level-1)
Date of Exam:	:	14.11.2023
Duration	:	120 Minutes
Total Marks	:	100

Instructions to the Candidates:

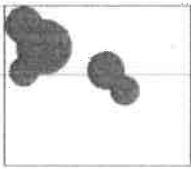
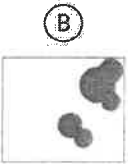
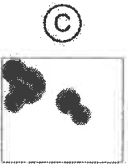
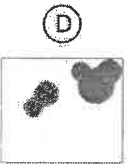
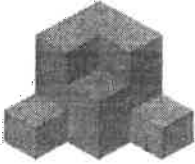
1. This Question paper contains printed pages with **100** questions.
2. All questions are multiple choice type questions (MCQs) with four choices (A), (B), (C), (D).
3. Candidates are not allowed to carry any paper, notes, books, gadgets etc. to the examination hall. Any candidate found using or in possession of such unauthorized materials or involved in copying or impersonation or adopting unfair means or behaviors will be disqualified and may be subjected to penal action.
4. There is only one correct answer. Choose the answer from among the four options given and mark the answer by darkening the appropriate bubble marked A, B, C, or D in the attached OMR.
5. Each question carries **ONE (1)** mark only. **1 mark** will be awarded for each correct answer; **0.25** mark will be deducted for each wrong answers. (Please refer instructions given at the back side of OMR Sheet)

S. No.	Questions
1.	STL file converts curved surfaces into _____. A. Polygons B. Lines C. Surfaces D. None of the above
2.	Which figure is identical to the first?  A B C D
3.	Which pattern can be folded to make the cube shown?  A B C D
4.	How is the material removed in Abrasive water jet machining? A. Vaporization B. Electron transfer C. Corrosion D. Erosion
5.	In Ultrasonic Machining, magnetostrictor converts magnetic energy into which type of energy? A. Mechanical energy B. Electrical energy C. Thermal energy D. None
6.	The angle of inclination of the rake face with respect to the tool base measured in a plane perpendicular to the base and parallel to the width of the tool is called _____ A. back rake angle B. side rake angle C. side cutting edge angle D. end cutting edge angle

	The instrument or device used to measure the cutting forces in machining is
7.	A. Tachometer B. Comparator C. Dynamometer D. Lactometer
8.	What is the grain size of abrasive particles, which are often used for Abrasive water jet machining? A. 0.01 – 0.50 μm B. 10 – 150 μm C. 200 – 500 μm D. 500 – 1000 μm
9.	The boundary line between (liquid+solid) and (solid) regions must be part of _____. A. Solvus B. Solidus C. Liquidus D. Tie-line
10.	Personal computers can be connected together to form a A. server B. supercomputer C. network D. enterprise
11.	Both nucleation and growth require change in free energy to be _____. A. -ve B. zero C. +ve D. Any
12.	wt.% of carbon in mild steels A. <0.008 B. 0.008-0.3 C. 0.3-0.8 D. 0.8-2.11
13.	In CNC programming G code command for Cutter radius Compensation is _____ A. G21 B. G32 C. G42 D. G41

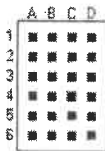
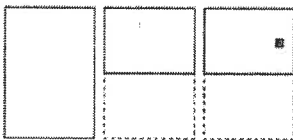
	A simply supported beam with a gradually varying load from zero at 'B' and 'w' per unit length at 'A'
14.	 A. $wl/6$ B. $wl/3$ C. wl D. $2wl/3$
15.	A coil spring is cut into two equal halves. The stiffness of the cut spring is A. Double B. Half C. Same D. None of the above
16.	The forces required for metal cutting operation A. increase with increase in the feed of the tool and decreases with increase in the depth of cut B. decrease with increase in the feed of the tool and increases with increase in the depth of cut C. increase with increase in both the feed of the tool and the depth of cut D. decrease with increase in both the feed of the tool and the depth of cut
17.	Which of the following statements are correct for CNC machine tool? 1. CNC control unit does not allow compensation for any changes in the dimensions of cutting tool 2. CNC machine tool are suitable for long run applications 3. It is possible to obtain information on machine utilization which is useful to management in CNC machine tool 4. CNC machine tool has greater flexibility 5. CNC machine can diagnose program and can detect the machine defects even before the part is produced A. (1), (2) and (3) B. (2), (4) and (5) C. (3), (4) and (5) D. (2), (3), (4) and (5)

18.	In Electrical Discharge Machining (EDM) process the metal removal is carried out by A. electrolysis B. melting and vaporisation C. fracture of work material due to impact of grains D. none of the above
19.	Which drilling machine is used to perform drilling operation on the workpieces which are too heavy and also maybe too large to mount on worktable? A. Portable drilling machine B. Sensitive drilling machine C. Radial drilling machine D. none of the above
20.	Which of the following statements is true for LVDT? A. It is a mutual capacitive transducer B. Presence of hysteresis gives high repeatability C. It can measure displacement and pressure D. All of the above
21.	ISO 14000 quality standard is related with A. Environmental management systems B. Automotive quality standards C. Eliminating poor quality D. Customer satisfaction
22.	Which principle does Taylor-Hobson-Talysurf tester work on? A. Capacitive demodulating principle B. Intensity modulating principle C. Inductive modulating principle D. Carrier modulating principle
23.	What is meant by Kaizen? A. card signal B. to avoid inadvertent errors C. change for better quality D. none of the above
24.	Which of the following options is the mirror image of the figure shown below?

	    
25.	Imagine if the object given below is made of unit cube of 10 cm by stacking. What is the total volume of the of the object. (hint: there are three layers)  A. 1300 cm^3 B. 160 cm^3 C. 13000 cm^3 D. 16000 cm^3
26.	Which Windows utility uses points in time that enable you to return your system to a previous date and state? A. System Configuration utility B. Snapshot Manager C. System Restore D. GRUB or LILO
27.	Which key combination is used to minimize all open windows and displays in the screen? A. ALT+M B. SHIFT+M C. Windows Key+D D. CTRL+D

28.	Primary Cache memory is located in: A. Hard Disk B. CPU C. Mother board D. Random Access Memory
29.	Which gear is used if the axes of two shafts are neither intersecting nor parallel? A. Helical gears B. Worm gears C. Bevel Gears D. None of the above
30.	Which factors are responsible for the failure of a component due to buckling? A. Yielding B. Plastic deformation C. Elastic instability D. All of the above
31.	For brittle materials having static load, factor of safety is given as the ratio of _____ A. endurance strength and design stress B. design stress and allowable stress C. working stress and allowable stress D. ultimate strength and design stress
32.	What is the centroidal distance from its side of an equilateral triangle of side 2 m? A. 0.866 m B. 0.769 m C. 1.000 m D. 0.577 m
33.	For brittle materials having static load, factor of safety is given as the ratio of _____ a. endurance strength and design stress b. design stress and allowable stress c. working stress and allowable stress d. ultimate strength and design stress

34.	Forces passing through a common point are known as ____ A. collinear forces B. co-planer forces C. concurrent forces D. none of the above
35.	Inconel 600 nickel alloy contains ____ A. 75% Ni, 15% Cr and 9% Fe B. 75% Ni, 15% Cr and 9% Al C. 75% Ni, 15% Cr and 9% Mg D. None of the above
36.	What is the effect of temperature on stiffness of a metal? A. Temperature has no effect on stiffness of a metal B. As temperature increases stiffness of metal decreases C. As temperature increases stiffness of metal increases D. None of the above
37.	What is the effect of temperature on stiffness of a metal? A. Temperature has no effect on stiffness of a metal B. As temperature increases stiffness of metal decreases C. As temperature increases stiffness of metal increases D. None of the above
38.	Eutectoid steel contains ____ A. 0.4 % Carbon B. 0.8 % Carbon C. 1.2 % Carbon D. 2.2 % Carbon
39.	What is the function of cone pulley drive in lathe machines? A. Drive the lead screw B. Change the spindle speed C. Drive the tail-stock D. All of the above
40.	Which of the following operations is/are performed on a lathe machine? A. Spot-facing B. Parting C. Reaming D. All of the above
41.	The power is transfitted by lead screw to the carriage through..... A. Gear box

	B.Worm and gear C.Rack and pinion D.Half nut								
42.	The purpose of using flux in soldering is to..... A.Increase fluidity of solder metal B.Feel up gaps left in a bad joint C.Carbon steel D.Prevent oxides forming								
43.	Loam sand comprises of A.50% sand and 10% moisture B.40% clay and 10% moisture C.50% clay and 18% moisture D.80% clay and 20% moisture								
44.	Shrinkage allowance is made by..... A.Adding to external and internal dimensions B.Subtracting from external and internal dimensions C.Subtracting from external dimensions and adding to internal diamensions D.Adding to external dimensions and subtracting from internal dimensions								
45.	Gears are best mass produced by..... A.Milling B.Hobbing C.Shaping D.Forming								
46.	The drawings show a sheet of paper which has been folded. The dashed lines indicate the whole sheet, each drawing represents a single fold. The black square shows where a hole was punched. Where do the holes appear when the sheet is unfolded?  <table><tr><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>2C,5C</td><td>2D,5D</td><td>3D,3D</td><td>2C,2D</td></tr></table>	A	B	C	D	2C,5C	2D,5D	3D,3D	2C,2D
A	B	C	D						
2C,5C	2D,5D	3D,3D	2C,2D						
47.	Poisson's ratio is A. Lateral strain / Longitudinal strain B. Shear strain / Lateral strain C. Longitudinal strain / Lateral strain								

	D. Lateral strain / Volumetric strain
48.	What do you call a single point on a computer screen: A. Cell B. Element C. Pixel D. None of The Above
49.	Which of the following operations is/are performed on a lathe machine? A. Spot-facing B. Parting C. Reaming D. All of the above
50.	A flat surface can be produced by a lathe machine, if the cutting tool moves _____ A. parallel to the axis of rotation of workpiece B. perpendicular to the axis of rotation of workpiece C. at an angle of 45° D. none of the above
51.	What is the function of cone pulley drive in lathe machines? A. Drive the lead screw B. Change the spindle speed C. Drive the tail-stock D.. All of the above
52.	Which of the following statements is/are true for gear drives? A. They can be used for long centre distances B. They are used to transmit power between non-intersecting and parallel shafts C. They cannot be used for high reduction ratios D.. All of the above
53.	Which gears are used to connect two intersecting shaft axes? A. Crossed helical gear B. Worm and worm wheel C. Bevel gears D. All of the above

54.	In stress-strain diagram, up to proportional limit _____ A. stress is inversely proportional to strain B. force is directly proportional to displacement C. stress is directly proportional to strain D. strain is directly proportional to stress
55.	In a tensile testing condition, deformation per unit length is called as _____ A. strain B. stress C. modulus of elasticity D. none of the above
56.	Factor of safety is the ratio of _____ A. working stress and ultimate strength B. yield strength and endurance strength C. ultimate strength and yield strength D. yield strength and working stress
57.	ISO 14000 quality standard is related with A. Environmental management systems B. Automotive quality standards C. Eliminating poor quality D. Customer satisfaction
58.	Which of the following statements is true for LVDT? A. It is a mutual capacitive transducer B. Presence of hysteresis gives high repeatability C. It can measure displacement and pressure D. All of the above
59.	Which of the following is an example of constant mass manufacturing process? A. Rolling B. Turning C. Broaching

	D. Sawing
60.	A model of casting, constructed to use for forming a mould in damp sand, is called as A. sand construction B. pattern C. cover D. none of the above
61.	The process of joining two pieces of metal with a different fusible metal applied in a molten state is called as A. welding B. soldering C. both A. and B. D. none of the above
62.	Calculate time taken to face a workpiece of 100 mm diameter. The cross feed is 0.2 mm/rev and spindle speed is 200 r.p.m. A. 10 min B. 5 min C. 2.5 min D. 1.25 min
63.	What is used as joining medium in brazing operation? A. Copper-zinc alloy B. Nickel-silver alloy C. Lead-tin alloy D. All of the above
64.	Chances of crack propagation are more in A. cold working process B. hot working process C. both A. and B. D. none of the above
65.	Support structures are required for ____. A. overhanging portions

	B. thin portions C. thick portions D. all of the mentioned
66.	Eutectic product in Fe-C system is called A. Pearlite B. Bainite C. Ledeburite D. Spheroidite
67.	A perfectly elastic body A. Can move freely B. Has perfectly smooth surface C. Is not deformed by any external surface D. Recovers its original size and shape when the deforming force is removed.
68.	Which of the following is a dimensionless quantity? A. Shear stress B. Poison's ratio C. Strain D. Both B. and C.
69.	When a wire is stretched to double in length, the longitudinal strain produced in it is A. 0.5 B. 1.0 C. 1.5 D. 2.0
70.	Directions for (70-73): Read the passage and answer the questions that follow from (70-73). “Uncle” said Luke to the old Sean “You seem to be well fed, though I know no one looks after you. Nor have I seen you leave your residence at any time. Tell me how you manage it?” “Because” Sean replied, “I have a good feed every night at Emperor’s orchard. After dark, I go there myself and pick out enough fruits to last a fortnight.” Luke proposed to accompany his uncle to the orchard. Though reluctant because of Luke’s habit of euphoric exhibition of extreme excitement, Sean agreed to take him along. At the orchard while Sean hurriedly collected the fruits and left, Luke on

	the other hand at the sight of unlimited supply of fruits was excited and lifted his voice which brought Emperor's men immediately to his side. They seized him and mistook him as the sole cause of damage to the orchard. Although Luke reiterated that he was a bird of passage, they pounded him mercilessly before setting him free. What does "bird of passage"; mean in the context of the given passage? A. There was a bird in the orchard B. Other people stole from the orchard C. Emperor knew him personally D. He did not visit orchard regularly e. Bird's song alerted Emperor's men
71.	Which of the following can be inferred from the passage? A. Luke did not take good care of his uncle B. Emperor was a wicked man C. Lack of self-control had put Luke into trouble D. Luke had a habit of speaking loudly
72.	How often did Sean visit the orchard? A. Daily B. Weekly C. Once in a month D. Every day after midnight
73.	Choose the word which is most nearly the same in meaning as the word "Reluctant" used in the passage. A. Against B. Resistant C. Opposed D. Disinclined
74.	Why sustainable manufacturing is required? A. proper maintenance B. reuse C. Conserving resources D. all of the mentioned
	Direction— (Q. 75-78) In each of the following given questions there is a question followed by two statements I and II are given. You have to find out that the information given in the statements is sufficient to answer or not. Read both the statements. Give Answer— (A) If only statement I is sufficient to answer the question.

	(B) If only Statement II is sufficient to answer the question. (C) If either I or II alone is sufficient to answer the question. (D) If both the Statements I and II are sufficient to answer the question. (E) If both the Statements I and II are not sufficient to answer the question.
75.	What is the meaning of 'come' in a coded language ? Statement - I. The meaning of 'pit na ja' is 'come and go' in that coded language. Statement - II. The meaning of 'na dik sa' is 'you may go' in that coded language.
76.	Who is the tallest amongst M, T, R, K and Q? Statement - I. T is taller than R, M and Q but shorter than K. Statement - II. R is shorter than T and M but taller than Q.
77.	In which direction is D from P? Statement - I. S is in the South from P which is in the West of D. Statement - II. P and R is in a straight line and R is in the South from D.
78.	In which month of the year Mohan was born? Statement - I. Mohan was born in the winter. Statement - II. Mohan was born exactly after 14 months of his sister, birth and she was born in the month of October.
79.	Gibbs phase rule for general system: A. $P+F=C-1$ B. $P+F=C+1$ C. $P+F=C-2$ D. $P+F=C+2$
80.	Which of the following operation is used to make a ball bearing? A. Upsetting B. Press forging C. Roll forging D. Skew rolling
81.	End of the work piece can be supported by using A. Headstock B. Tailstock C. Tool Post D. None of the mentioned
82.	Maximum deviation in size of shaft or hole is known as A. Tolerance

	B. Fundamental deviation C. Clearance D. Interference
83.	Which of the following process involves metallurgical fusion? A. Forming B. Welding C. Forging D. Extrusion
84.	Solidification of casting does not depend upon which factor? A. Type of metal B. Thermal properties of metal C. Geometric relationship between volume and surface area D. Surface tension
85.	When the molten metal leaks out of mould which defect occurs? A. Run out B. Misrun C. Fusion D. Drop
86.	In a shaper machine, time of return stroke is _____ the time of forward stroke in crank and slotted link mechanism. A. Less than B. More than C. Equal to D. None of the mentioned
87.	9. Which of the following carries clamping bolt T-slots for fixing work piece? A. Base B. Column C. Knee D. Table
88.	Typical coolants used for machining of aluminum 1. Kerosene 2. Soda water 3. Air 4. Paraffin oil A. 1, 2, 3, and 4 B. 2 and 3 only C. 1 and 2 only D. 3 and 4 only

89.	When a wire is stretched to double in length, the longitudinal strain produced in it is A. 0.5 B. 1.0 C. 1.5 D. 2.0
90.	Thickness of tooth measured along the pitch circle is known as A. Tooth thickness B. Backlash C. Face width D. Top land
91.	During the execution of a CNC part program block NO20 GO2 X45.0 Y25.0 R5.0 the type of tool motion will be A. circular Interpolation – counterclockwise B. circular Interpolation – clockwise C. linear Interpolation D. rapid feed
92.	Hydraulic drives are used for a robot when A. high torque is required B. high power is required C. rapid motion of robot arm D. all of the mentioned
93.	Following is the data available on cutting speed and tool life $V = 150$ m/min, $T = 60$ min $V = 200$ m/min, $T = 23$ min. Determine the Taylors constant and tool life exponent. A. $n = 0.5$, $C = 100$ B. $n = 0.5$, $C = 400$ C. $n = 0.3$, $C = 400$ D. $n = 0.3$, $C = 512$
94.	Operation of finishing previously drilled hole in order to bring it to accurate size and have good surface finish is known as A. Drilling B. Reaming C. Boring D. Counter boring
95.	Which of the following milling operation can be used for machining a flat surface, parallel to the axis of cutter? A. Slab milling B. Face milling C. Angular milling

	D. Form milling
96.	Which of the following property can be enhanced by reinforcing with ceramics in aluminum alloy? A. Density B. Torsion resistance C. Wear resistance D. Strength
97.	The average age of seven boys sitting in a row facing North is 26 years. If the average age of the first three boys is 19 years and the average age of the last three boys is 32 years, what is the age of the boy who is sitting in the middle of the row? A. 24 years B. 28 years C. 29 years D. 31 years
98.	Which figure is identical to the first?      A B C D
99.	If the price of a book is first decreased by 25% and then increased by 20%, then the net change in the price will be A. 5% increase B. 5% decrease C. 10% decrease D. 10% increase
100.	The firethe huts before the fire brigade came. A. had burnt B. will burn C. has burnt D. burns