These are sample MCQs to indicate pattern, may or may not appear in examination

University of Mumbai

Examination 2020

Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2016

Examination: Second Year Semester III

Course Code: **MEC303** and Course Name: **Strength of Materials**

Time: 1 hour Max. Marks: 50

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Note to the students: - All the Questions are compulsory and carry equal marks.

Q1.	An elastic rod 30 mm in diameter, 300 mm long extends by 0.28 mm under atensile load of 30 kN. Find the intensity of stress? Find the Modulus of Elasticity?
Option A:	45471.42 N/mm2
Option B:	42451.46 N/mm2
Option C:	47564.26 N/mm2
Option D:	49564.26 N/mm2
Q2.	A rod tapers uniformly from 30 mm to 15 mm diameter in a length of 300 mm.if the rod be subjected to an axial load of 6000 N, find the extension of the rod.Take E =200000 N/mm2.
Option A:	0.025 mm
Option B:	0.035 mm
Option C:	0.045 mm
Option D:	0.030 mm
Q3.	When a member subjected to increase in temperature then free expansion of the member occurs, if the free expansion of the member is prevented the member is under .....and ..... stress is produced in the member.
Option A:	compression, compressive
Option B:	compression, tensile
Option C:	tension, compressive
Option D:	tension, tensile
Q4.	A material has a Young's Modulus of 125000 N/mm2 and a Poisson's ratio of0.25. Calculate the Modulus of Rigidity.
Option A:	40000 N/mm2
Option B:	50000 N/mm2
Option C:	60000 N/mm2
Option D:	70000 N/mm2

Q5.	A-rectangular bar of cross-sectional area 10000 mm2 is subjected to an axial load of 20 kN. Determine the normal stress on a section which is inclined at an angle of 30° with normal cross-section of the bar.
Option A:	1.4 N/mm2
Option B:	1.5 N/mm2
Option C:	1.6 N/mm2
Option D:	1.7 N/mm2
Q6.	A steel plate of width 120 mm and of thickness 20 mm is bent into a circular arc of radius 10 m. Determine the maximum stress induced. Take E = 200000 N/mm2.
Option A:	200 N/mm2
Option B:	180 N/mm2
Option C:	220 N/mm2
Option D:	240 N/mm2
Q7.	The value of bending stress is ..... at extreme surface of the beam from neutral axis.
Option A:	maximum
Option B:	minimum
Option C:	zero
Option D:	infinity
Q8.	A rectangular beam 200 mm deep and 300 mm wide is simply supported over a span of 8 m. What uniformly distributed load per metre the beam may carry, if the bending stress is not to exceed 120 N/mm2.
Option A:	30 kN/m
Option B:	40 kN/m
Option C:	50 kN/m
Option D:	60 kN/m
Q9.	Find the power that can be transmitted by a shaft 60 mm diameter, at 180 r.p.m. if the permissible shear stress is 85 N/mm2.
Option A:	67.95 kw
Option B:	57.95 kw
Option C:	77.95 kw
Option D:	70.95 kw
Q10.	A hollow steel shaft of external diameter 150 mm and internal diameter 100 mmis 1.5 m long. Find the maximum torque required to produce a twist of 0.5degree over the length of the shaft. Take C = 80000 N/mm2.
Option A:	18.5626 kNm
Option B:	16.5626 kNm
Option C:	17.5626 kNm
Option D:	19.5626 kNm

Q11.	A simply supported beam of lenth 5 m carries a central point load of 100 kN and having 100 mm x 200 mm c/s dimensions. Calculate the maximum shear stress
Option A:	3.75 N/mm2
Option B:	2.75 N/mm2
Option C:	1.75 N/mm2
Option D:	4.75 N/mm2
Q12.	A simply supported beam of length 6 m carries a central point load of 50 kN and having 50 mm x 100 mm c/s dimensions. Calculate the shear stress at neutral axis.
Option A:	6.5 N/mm2
Option B:	5.5 N/mm2
Option C:	7.5 N/mm2
Option D:	8.5 N/mm2
Q13.	A steel shaft transmits 105 kW at 160 rpm. If the shaft is 100 mm in diameter,find the maximum shearing stress induced.
Option A:	21.91 N/mm2
Option B:	31.91 N/mm2
Option C:	41.91 N/mm2
Option D:	51.91 N/mm2
Q14.	Sagging, the bending moment occurs at the _____ of the beam.
Option A:	At supports
Option B:	Mid span
Option C:	Point of contraflexure
Option D:	Point of emergence
Q15.	The relation between slope and maximum bending moment is _____
Option A:	Directly proportion
Option B:	Inversely proportion
Option C:	Relative proportion
Option D:	Mutual incidence
Q16.	How do point loads and udl be represented in SFD?
Option A:	Simple lines and curved lines
Option B:	Simple lines and inclined lines
Option C:	Cant represent any more
Option D:	Curved lines and inclined lines
Q17.	In simply supported beam deflection is maximum at _____
Option A:	Midspan
Option B:	Supports
Option C:	Point of loading
Option D:	Through out

Q18.	In simply supported beams, the slope is _____ at supports.
Option A:	Minimum
Option B:	Zero
Option C:	Maximum
Option D:	Uniform
Q19.	In thin cylinders, the thickness should be _____ times of internal diameter.
Option A:	1/20
Option B:	1/15
Option C:	1/30
Option D:	1/40
Q20.	Oil tanks, steam boilers, gas pipes are examples of _____
Option A:	Thick shells
Option B:	Thin cylinders
Option C:	Hoop cylinders
Option D:	Longitudinal cylinders
Q21.	Calculate the Strain energy stored in a body of stress 0.0366 N/mm2. The cross sectional area is 60 m2 and length of body is 1 m. Take E = 200000 N/mm2.
Option A:	0.2009 N.mm
Option B:	0.0416 N.mm
Option C:	0.0987 N.mm
Option D:	0.1316 N.mm
Q22.	Resilience can also be termed as _____
Option A:	Stress energy
Option B:	Strain energy
Option C:	Modulus
Option D:	Tenacity
Q23.	A column that fails due to direct stress is called……
Option A:	Short column
Option B:	Long column
Option C:	Medium column
Option D:	Slender column
Q24.	A column of length 4m with both ends fixed may be considered as equivalent to a column of length ……with both ends hinged.
Option A:	2 m
Option B:	1m
Option C:	3m
Option D:	6m

Q25.	Euler’s formula is not valid for mild steel column when slenderness ratio is
Option A:	More than 100
Option B:	Less than 100
Option C:	Less than 80
Option D:	More than 80