



ACE

Engineering Academy

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MECHANICAL ENGINEERING

BPSK PRACTICE QUESTIONS

01. The effort of a governor is defined as the force to be applied on its sleeve for
(A) 5 percent change in speed (B) 3 percent change in speed
(C) 1 percent change in speed (D) no change in speed
02. A link, which is free in space, has degree of freedom equal to
(A) 3 (B) 6 (C) 5 (D) 4
03. The standard value of addendum is
(A) 2 module (B) 1.157 module (C) 1 module (D) 3 module
04. Which of the following is not a spring controlled governor?
(A) Hartnell governor (B) Hartung governor (C) Pickering governor (D) Porter governor
05. Which of the following parameters has higher value during whirling of a shaft?
(A) Speed (B) Acceleration (C) Frequency (D) Amplitude
06. The cross-section of a V-belt is
(A) circular (B) trapezoidal (C) rectangular (D) elliptical
07. The groove angle of the rope is usually
(A) 45° (B) 30° (C) 25° (D) 15°
08. Stress-strain analysis is conducted to know which of the following properties of material?
(A) Physical properties (B) Optical properties
(C) Mechanical properties (D) Magnetic properties
09. A prismatic bar has
(A) maximum ultimate strength (B) maximum yield strength
(C) varying cross-section (D) uniform cross-section

10. The failure criterion for ductile materials is based on
(A) yield strength (B) ultimate strength
(C) shear strength (D) limit of proportionality
11. In terms of bulk modulus (K) and modulus of rigidity (G), the Poisson's ratio can be expressed as
(A) $(3K - 2G)/(6K + 4G)$ (B) $(3K + 4G)/(6K - 4G)$
(C) $(3K - 2G)/(6K + 2G)$ (D) $(3K + 2G)/(6K - 2G)$
12. Principal planes are planes of
(A) maximum normal stress (B) zero-shear stress
(C) minimum shear stress (D) maximum shear stress
13. The flexural rigidity is the product of
(A) modulus of elasticity and mass moment of inertia
(B) modulus of rigidity and area moment of inertia
(C) modulus of rigidity and mass moment of inertia
(D) modulus of elasticity and area moment of inertia
14. The slope and deflection at the centre of a simple beam carrying a central point load are
(A) zero and zero (B) zero and maximum
(C) maximum and zero (D) minimum and maximum
15. In a close-coiled helical spring
(A) plane of the coil axis of the spring are closely attached
(B) angle of helix is large
(C) plane of the coil is normal to the axis of the spring
(D) deflection is small
16. Euler's formula is valid for
(A) short column (B) medium column
(C) long column (D) short and long columns both
17. For a thick-walled shell, the diameter-thickness ratio is
(A) less than 20 (B) greater than 20 (C) equal to 20 (D) equal to 10

18. In a thick cylinder, radial stress in inner surface is
(A) independent of fluid pressure (B) more than fluid pressure
(C) less than fluid pressure (D) equal to fluid pressure
19. Pure graphite contains
(A) 0 % of carbon (B) 2% of carbon
(C) 6.67% of carbon (D) 100% of carbon
20. Addition of vanadium to steel results in the improvement of
(A) heat treatability by quenching (B) hardenability
(C) fatigue strength (D) resistance to oxidation at elevated temperature
21. Surface hardening is principally employed for
(A) low-carbon steel (B) medium-carbon steel
(C) high-carbon steel (D) cast iron
22. Monel metal is a
(A) Nickel-zinc alloy (B) copper-zinc alloy
(C) nickel-copper alloy (D) copper-tin alloy
23. Which of the following are weldable plastic?
(A) Thermosets alone (B) Thermoplastics alone
(C) Both thermosets and thermoplastics (D) Neither thermosets nor thermoplastics
24. The chemical name of bakelite is
(A) polytetrafluoroethylene (B) phenol formaldehyde
(C) phenol acetaldehyde (D) urea formaldehyde
25. The cutting speed of a tool is
(A) directly proportional to the diameter being cut
(B) inversely proportional to the diameter being cut
(C) directly proportional to the square of the diameter being cut
(D) independent of the diameter being cut

26. According to the Ernst and Merchant theory, the relationship among shear angle (ϕ), friction angle (β) and rake angle (α) is
- (A) $2\phi + \beta + \alpha = 90^\circ$ (B) $2\phi + \beta - \alpha = 45^\circ$
(C) $2\phi + \beta - \alpha = 90^\circ$ (D) $\phi + 2\beta - \alpha = 90^\circ$
27. Which of the following operations is also known as internal turning?
- (A) Milling (B) Facing (C) Tapping (D) Boring
28. Zinc alloys are preferentially cast by
- (A) investment casting (B) die casting
(C) centrifugal casting (D) shell-mould casting
29. A chaplet is used
- (A) to create a void in the casting (B) to withdraw the pattern from a mould
(C) to act as a reservoir of molten metal (D) to support the core
30. Nose radius is expressed in
- (A) metre (B) inch (C) degree (D) centimetre
31. Which of the following grinding processes is used for high production run?
- (A) Surface grinding (B) Cylindrical grinding
(C) Centreless grinding (D) Internal grinding
32. Which of the following resistance weldings is used for making leak proof joint?
- (A) Spot welding (B) Projection welding
(C) Seam welding (D) Percussion welding
33. The most common type of drill is
- (A) step drill (B) twist drill (C) spot drill (D) spade drill
34. Which of the following processes results in the best accuracy of the whole made?
- (A) Reaming (B) Tapping (C) Broaching (D) Boring
35. Coining resembles
- (A) upset forging (B) flashless forging (C) open-die forging (D) swaging

36. The floating position of the holding fixture in a rotary transfer device is used to
- (A) improve the accuracy of location
 - (B) reduce the tendency to over index
 - (C) reduce the cycle time
 - (D) improve upon the acceleration and deceleration characteristics
37. A diamond-locating pin is used in jigs and fixtures, because
- (A) diamond is very hard and wear-resistant
 - (B) it occupies very little space
 - (C) it helps in assembly with tolerance on central distance
 - (D) it has a long life
38. PERT is a
- (A) two-time estimate technique
 - (B) three-time estimate technique
 - (C) four-time estimate technique
 - (D) five-time estimate technique
39. Activities falling on the critical path have
- (A) zero slack
 - (B) maximum slack
 - (C) minimum slack
 - (D) negative slack
40. Current period forecast becomes equal to last period forecast for the value of smoothing constant equal to
- (A) 1
 - (B) 2
 - (C) 0
 - (D) 0.5
41. Lean production is related to
- (A) mass production
 - (B) batch production
 - (C) customized production
 - (D) stock-driven production
42. Similar machines are arranged at one location in
- (A) product layout
 - (B) process layout
 - (C) hybrid layout
 - (D) cellular layout
43. Group technology is related to
- (A) product layout
 - (B) functional layout
 - (C) fixed-position layout
 - (D) cellular layout
44. Line balancing is related to
- (A) product layout
 - (B) process layout
 - (C) hybrid layout
 - (D) cellular layout

45. Which of the following manufacturing systems has shortest delivery time?
(A) Make to order (B) Assemble to order (C) Engineer to order (D) Make to start
46. The ideal batch size in JIT production consists of
(A) one part (B) two parts (C) ten parts (D) five parts
47. The total cost curve is
(A) L-shaped (B) O-shaped (C) U-shaped (D) S-shaped
48. Materials handling system includes
(A) Automated Guided Vehicles (AGV) (B) Automated Storage/Retrieval systems (AS/RS)
(C) Robots (D) All of the above
49. Mass production is characterized by
(A) low-volume items with maximum flexibility in their design
(B) high-volume items with maximum flexibility in their design
(C) high-volume items with minimum flexibility in their design
(D) low-volume items with minimum flexibility in their design
50. Therbligs consist of
(A) 15 basic hand motions (B) 16 basic hand motions
(C) 17 basic hand motions (D) 20 basic hand motions

