



Booklet Series

**A**

10/CME/M-2025-04

Question Booklet  
**GENERAL ENGINEERING SCIENCE**  
Paper – IV

Booklet Serial No.

1252136

Candidate's Roll Number

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Time Allowed : 01 Hour

Maximum Marks : 100

Read the following instructions carefully before you begin to answer the questions.

**IMPORTANT INSTRUCTIONS**

1. This Question Booklet contains 50 questions in all.
2. All questions carry equal marks.
3. Attempt all questions.
4. An Answer Sheet has been supplied inside the question booklet to mark the answers. **You must write your Roll Number and encode it and write other particulars in the space provided in the Answer Sheet, failing which your Answer Sheet will not be evaluated.**
5. **Immediately after commencement of the examination, you should check up your Question Booklet and attached answer sheet and ensure that the Question Booklet Series is printed on the top left-hand corner of the Booklet and the series encoded in answer sheet are same. Also please check that the Booklet contains 12 printed pages including two pages (Page Nos. 11 and 12) for Rough Work and no page or question is missing or unprinted or torn or repeated or question booklet and answer sheet have different series. If you find any defect in this Booklet and attached answer sheet, get it replaced immediately by a complete Booklet with OMR sheet of the same series.**
6. You must write your Roll Number in the space provided on the top of this page. Do not write anything else on the Question Booklet.
7. Questions and their responses are printed in English version in this Booklet. Each question comprises of **four** responses — (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark it in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet, there are **four** circles — (A), (B), (C) and (D) against each question. To answer the questions, you are to mark with **Black/Blue ink ballpoint pen ONLY ONE circle** of your choice for each question. Select only one response for each question and mark it in your Answer Sheet. If you mark more than one circle for one question, the answer will be treated as wrong. **Use Black/Blue ink ballpoint pen only to mark the answer in the Answer Sheet. Any erasure or change is not allowed.**
9. You should not remove or tear off any sheet from the Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. **After the examination has concluded, you must hand over your Answer Sheet to the Invigilator.** Thereafter, you are permitted to take away the Question Booklet with you.
10. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.
11. Candidates must assure before leaving the Examination Hall that their Answer Sheets will be kept in Self Adhesive LDPE Bag and completely packed/sealed in their presence.



1. Rapid asset-to-cash conversion is referred to as
- (A) Liquidity
  - (B) Solvency
  - (C) Leveraged
  - (D) Insolvency
2. The polar modulus for a hollow shaft of outer diameter (D) and inner diameter (d) is
- (A)  $\frac{\pi}{32} (D^3 - d^3)$
  - (B)  $\frac{\pi}{16} (D^3 - d^3)$
  - (C)  $\frac{\pi}{32} (D^4 - d^4)$
  - (D)  $\frac{\pi}{4} (D^2 - d^2)$
3. In chain surveying field work is limited to
- (A) Both linear and angular measurements
  - (B) Angular measurements only
  - (C) Linear measurements only
  - (D) All of the above
4. Law which states that the ratio of the emissive power and absorptive power of all bodies is the same and is equal to the emissive power of a perfectly blackbody
- (A) Wien law
  - (B) Planck's law
  - (C) Kirchhoff's law
  - (D) Stefan's law
5. A queen closer is a
- (A) Brick laid with its length parallel to the face or direction of wall
  - (B) Brick with half the width at one end and full width at the other
  - (C) Brick laid with its breadth parallel to the face or direction of wall
  - (D) Brick having the same length and depth as the other bricks but half the breadth
6. Instrument used to check the continuity and insulation resistance of an electrical installation is
- (A) Energy meter
  - (B) Megger
  - (C) Ammeter
  - (D) Voltmeter





7. Which of the following is an example of impulse turbine ?

- (A) Pelton turbine
- (B) Francis turbine
- (C) Propeller turbine
- (D) Kaplan turbine

8. One force that doubles the magnitude of the other produces a resultant force that is perpendicular to the smaller force. The angle between the two forces is

- (A)  $90^\circ$
- (B)  $60^\circ$
- (C)  $120^\circ$
- (D)  $45^\circ$

9. Time and progress chart of a construction, is also known as

- (A) Gantt chart
- (B) Modified mile stone chart
- (C) Bar chart
- (D) All of the above

10. Which of the following salts are the main causes of temporary hardness ?

- (A) Magnesium chloride
- (B) Magnesium carbonate
- (C) Calcium sulphate
- (D) Magnesium sulphate

11. The intensity of radiation is obtained by multiplying the emissive power by a factor of

- (A)  $\frac{1}{\sqrt{2}}$
- (B)  $\frac{1}{\pi}$
- (C)  $\frac{\sqrt{2}}{\pi}$
- (D)  $\pi$

12. When two centrifugal pumps are operated in series, the discharge

- (A) Decreases
- (B) Initially increases, then decreases
- (C) Remains constant
- (D) Increases





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13. Seasoning of timber is done
- (A) To increase its temperature
  - (B) To paint its surface
  - (C) To remove water
  - (D) To make it water proof
14. A 50 Kg boy runs up a flight of stairs having a rise of 10 m in 5 s. The power developed by him will be
- (A) 1500 W
  - (B) 1000 W
  - (C) 2000 W
  - (D) 500 W
15. The condition for maximum efficiency for a D.C. generator is
- (A) Hysteresis losses = eddy current losses
  - (B) Eddy current losses = stray losses
  - (C) Copper losses = 0
  - (D) Variable losses = constant losses
16. If the times for an activity are 2, 3 and 7 for the optimistic, most likely and pessimistic scenarios, then the expected time and variance are
- (A) 5 and 25/36
  - (B) 3.5 and 25/36
  - (C) 5 and 5/6
  - (D) 3.5 and 5/6
17. The velocity distribution at any section of a pipe for steady laminar flow is
- (A) Hyperbolic
  - (B) Linear
  - (C) Parabolic
  - (D) Exponential
18. A line AB has a magnetic bearing of S 30° E. If 7° 30' East is the declination, find its true bearing.
- (A) N 33° 30' W
  - (B) S 33° 30' E
  - (C) N 22° 30' W
  - (D) S 22° 30' E





19. The exertion of Biochemical Oxygen Demand (BOD) by microorganisms is called
- (A) Eutrophication
  - (B) Deoxygenation
  - (C) Reoxygenation
  - (D) Transpiration
20. The main ingredients of Portland cement are
- (A) Lime and silica
  - (B) Silica and alumina
  - (C) Lime and iron
  - (D) Lime and alumina
21. Five  $25 \Omega$  resistors are connected in parallel. The equivalent resistance of the parallel connection is
- (A)  $25 \Omega$
  - (B)  $5 \Omega$
  - (C)  $12.5 \Omega$
  - (D)  $125 \Omega$
22. The kinetic energy of a body is 5 times its momentum. What is the velocity of the body ?
- (A)  $7.5 \text{ m/s}$
  - (B)  $5 \text{ m/s}$
  - (C)  $10 \text{ m/s}$
  - (D)  $2.5 \text{ m/s}$
23. Determine the Reynolds number when water flows through a 100 mm diameter pipe at a speed of 10 m/s and has a kinematic viscosity of  $0.01 \times 10^{-4} \text{ m}^2/\text{s}$ .
- (A)  $1 \times 10^6$
  - (B)  $1.6 \times 10^6$
  - (C)  $0.5 \times 10^6$
  - (D)  $2.2 \times 10^6$
24. When a beam of length L is subjected to a constant B.M., the energy it stores is
- (A)  $M^2L / EI$
  - (B)  $ML^2 / 2EI$
  - (C)  $M^2L / 2EI$
  - (D)  $ML^2 / EI$





25. In PERT analysis, the time estimates of activities and probability of their occurrence follow
- (A) Poisson's distribution curve
  - (B) Beta distribution curve
  - (C) Normal distribution curve
  - (D) Binomial distribution curve
26. Bond created by laying alternate headers and stretchers in a single course is referred as
- (A) Flemish bond
  - (B) Stretcher bond
  - (C) Zigzag bond
  - (D) English bond
27. Azimuth is defined as the angle between a reference meridian and the
- (A) Horizontal plane
  - (B) Line of sight
  - (C) Vertical plane
  - (D) Magnetic meridian
28. How does the working fluid's specific heat ratio ( $\gamma$ ) affect the thermal efficiency of an air-standard Otto cycle ?
- (A) The efficiency is independent of  $\gamma$
  - (B) An increase in  $\gamma$  decreases the efficiency
  - (C) The efficiency initially increases with  $\gamma$  but then decreases after a certain point
  - (D) An increase in  $\gamma$  increases the efficiency
29. When a solid shaft is subjected to a torsion, the shear stress induced in the shaft at its center is
- (A) Zero
  - (B) Maximum
  - (C) Minimum
  - (D) Average





30. The assumptions for thermal boundary layer are
- Steady compressible flow.
  - Negligible body forces, viscous heating and conduction in the flow direction.
  - Constant fluid properties evaluated at the film temperature.

Identify the correct option.

- ii and iii
- i and iii
- i and ii
- i, ii and iii

31. A 6 Kg body is at rest. It increases a speed of 10 m/s when a constant force is applied. The work done by the force will be

- 300 J
- 350 J
- 550 J
- 400 J

32. The purest form of iron is

- Wrought iron
- Cast iron
- Pig iron
- Mild steel

33. Which instrument is typically used to measure the slope or gradient of the land ?

- Compass
- Clinometer
- Dumpy level
- Electronic Distance Measurement

34. When a body floating in a liquid, is displaced slightly, it oscillates about

- Center of pressure
- Center of buoyancy
- C. G. of body
- Metacentre





35. Which theory states that for no failure absolute maximum shear stress should always less than the maximum shear stress under uniaxial loading ?
- (A) Rankine's theory/Lame's theory
  - (B) Haigh's theory
  - (C) Tresca's theory/Guest theory
  - (D) St. Venant's theory
36. Which of the following methods best utilizes coal as fuel while causing the least amount of air pollution ?
- (A) Pre-treatment of coal to remove sulphur
  - (B) Low sulphur fuels
  - (C) Breakdown coal chunks
  - (D) Coal gasification
37. When a body's displacement is directly proportional to the square of time, it moves with
- (A) Decreasing acceleration
  - (B) Uniform velocity
  - (C) Increasing acceleration
  - (D) Uniform acceleration
38. The SI unit of magnetic flux is
- (A) Weber
  - (B) Ampere-turn/weber
  - (C) Ampere/metre
  - (D) Henry
39. The pressure of water in a pipe when water is not flowing is  $5 \times 10^5$  Pa and when the water flows the pressure falls to  $4.5 \times 10^5$  Pa. Find the speed of flow of water (in m/s).
- (A) 5
  - (B) 10
  - (C) 1
  - (D) 20
40. Which of the following branch of surveying is used to find the elevations of given points with respect to given or assumed datum ?
- (A) Plane table surveying
  - (B) Levelling
  - (C) Traversing
  - (D) Contouring





41. To a gaseous system with an internal energy of 50 J, 150 J of heat is applied. Then the amount of external work done is
- (A) 75 J  
(B) 100 J  
(C) 200 J  
(D) 125 J
42. Which is the renewable exhaustible natural energy resource ?
- (A) Biomass  
(B) Coal  
(C) Kerosene  
(D) Petroleum
43. Purpose of using auto-collimator is to
- (A) Measure small angular differences  
(B) Check surface linearity  
(C) Measure concavity  
(D) Measure flatness
44. The Thevenin voltage is the
- (A) Short circuit voltage  
(B) Open circuit voltage  
(C) Neither open circuit nor short circuit voltage  
(D) Open circuit and short circuit voltage
45. The time by which a particular activity can be delayed without affecting the preceding and succeeding activities is known as
- (A) Total float  
(B) Independent float  
(C) Free float  
(D) Interfering float
46. The kind of lime used in the construction of underwater structures
- (A) Pure lime  
(B) Hydraulic lime  
(C) Quick lime  
(D) Fat lime





47. Coefficient of discharge ( $C_d$ ) of a flow – measuring device is defined as the
- (A) Product of actual discharge and theoretical discharge
  - (B) Product of cross-sectional area and velocity
  - (C) Ratio of theoretical discharge to actual discharge
  - (D) Ratio of actual discharge to theoretical discharge

48. Acid rain is caused by oxides of
- (A) Nitrogen and Carbon
  - (B) Sulphur and Phosphorus
  - (C) Sulphur and Nitrogen
  - (D) Phosphorus and Carbon

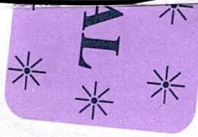
49. Determine the value of the Poisson's ratio if the bulk modulus  $K$  and the Young's modulus  $E$  are equal.

- (A)  $2/3$
- (B)  $1/3$
- (C)  $1/4$
- (D)  $1/2$

50. The ratio of inductive reactance to capacitive reactance in an AC circuit will be

- (A)  $\omega C^2$
- (B)  $\omega^2 L$
- (C)  $\omega^2 LC$
- (D) 1





SPACE FOR ROUGH WORK

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