Voice Principal / Superintendent ETI Comp. Exam 2024 (Skill & Enter. Dep H.T)

419969

SPV-25

पुस्तिका में पृष्ठों की संख्या : 24
Number of Pages in Booklet : 24
पुस्तिका में प्रश्नों की संख्या : 150
No. of Questions in Booklet : 150

प्रश्न–पुस्तिका संख्या व बारकोड /
Question Booklet No. & Barcode

इस प्रश्न-पुस्तिका को तब तक न खोलें जब तक कहा न जाए। Do not open this Question Booklet until you are asked to do so.

Paper Code : 07

Sub : Mechanical Engineering

समय : 02:30 घण्टे + 10 मिनट अतिरिक्त* Exam Date 30/07/2025 **अधिकतम अंक : 150**
Time : 02:30 Hours + 10 Minutes Extra* **Maximum Marks : 150**

प्रश्न–पुस्तिका के पेपर की सील/पॉलिथीन बैग को खोलने पर प्रश्न–पत्र हल करने से पूर्व परीक्षार्थी यह सुनिश्चित कर लें कि :

- प्रश्न–पुस्तिका संख्या तथा ओ.एम.आर. उत्तर–पत्रक पर अंकित बारकोड संख्या समान हैं।
- प्रश्न–पुस्तिका एवं ओ.एम.आर. उत्तर–पत्रक के सभी पृष्ठ व सभी प्रश्न सही मुद्रित हैं। समस्त प्रश्न, जैसा कि ऊपर वर्णित है, उपलब्ध हैं तथा कोई भी पृष्ठ कम नहीं है/ मुद्रण त्रुटि नहीं है।

किसी भी प्रकार की विसंगति या दोषपूर्ण होने पर परीक्षार्थी वीक्षक से दूसरा प्रश्न–पत्र प्राप्त कर लें। यह सुनिश्चित करने की जिम्मेदारी अभ्यर्थी की होगी। परीक्षा प्रारम्भ होने के 5 मिनट पश्चात् ऐसे किसी दावे/आपत्ति पर कोई विचार नहीं किया जायेगा।

On opening the paper seal/polythene bag of the Question Booklet before attempting the question paper, the candidate should ensure that :

- **Question Booklet Number and Barcode Number of OMR Answer Sheet are same.**
- **All pages & Questions of Question Booklet and OMR Answer Sheet are properly printed. All questions as mentioned above are available and no page is missing/misprinted.**

If there is any discrepancy/defect, candidate must obtain another Question Booklet from Invigilator. Candidate himself shall be responsible for ensuring this. No claim/objection in this regard will be entertained after five minutes of start of examination.

परीक्षार्थियों के लिए निर्देश

1. **प्रत्येक प्रश्न के लिये एक विकल्प भरना अनिवार्य है।**
2. **सभी** प्रश्नों के अंक समान हैं।
3. प्रत्येक प्रश्न का मात्र **एक** ही उत्तर दीजिए। एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा।
4. **OMR** उत्तर-पत्रक इस प्रश्न-पुस्तिका के अन्दर रखा है। जब आपको प्रश्न-पुस्तिका खोलने को कहा जाए, तो उत्तर-पत्रक निकाल कर ध्यान से केवल **नीले बॉल पॉइंट पेन** से विवरण भरें।
5. कृपया अपना रोल नम्बर ओ.एम.आर. उत्तर-पत्रक पर सावधानीपूर्वक सही भरें। गलत रोल नम्बर भरने पर परीक्षार्थी स्वयं उत्तरदायी होगा।
6. **ओ.एम.आर. उत्तर-पत्रक में करेक्शन पेन/व्हाईटनर/सफेदा का उपयोग निषिद्ध है।**
7. **प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा।** गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है।
8. **प्रत्येक प्रश्न के पाँच विकल्प दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4, 5 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले (बबल) को उत्तर-पत्रक पर नीले बॉल पॉइंट पेन से गहरा करना है।**
9. **यदि आप प्रश्न का उत्तर नहीं देना चाहते हैं तो उत्तर-पत्रक में पाँचवें (5) विकल्प को गहरा करें। यदि पाँच में से कोई भी गोला गहरा नहीं किया जाता है, तो ऐसे प्रश्न के लिये प्रश्न अंक का 1/3 भाग काटा जायेगा।**
10. * **प्रश्न-पत्र हल करने के उपरांत अभ्यर्थी अनिवार्य रूप से ओ.एम.आर. उत्तर-पत्रक जाँच लें कि समस्त प्रश्नों के लिये एक विकल्प (गोला) भर दिया गया है। इसके लिये ही निर्धारित समय से 10 मिनट का अतिरिक्त समय दिया गया है।**
11. **यदि अभ्यर्थी 10% से अधिक प्रश्नों में पाँच विकल्पों में से कोई भी विकल्प अंकित नहीं करता है तो उसको अयोग्य माना जायेगा।**
12. **मोबाइल फोन अथवा अन्य किसी इलेक्ट्रोनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।**

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए **राजस्थान सार्वजनिक परीक्षा (भर्ती में अनुचित साधनों की रोकथाम अध्युपाय) अधिनियम, 2022** तथा अन्य प्रभावी कानून एवं आयोग के नियमों-प्रावधानों के तहत कार्यवाही की जाएगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

INSTRUCTIONS FOR CANDIDATES

1. **It is mandatory to fill one option for each question.**
2. **All** questions carry equal marks.
3. Only **one** answer is to be given for each question. If more than **one** answers are marked, it would be treated as wrong answer.
4. The **OMR** Answer Sheet is inside this Question Booklet. When you are directed to open the Question Booklet, take out the Answer Sheet and fill in the particulars carefully with **Blue Ball Point Pen** only.
5. Please correctly fill your Roll Number in **OMR** Answer Sheet. Candidates will themselves be responsible for filling wrong Roll No.
6. **Use of Correction Pen/Whitener in the OMR Answer Sheet is strictly forbidden.**
7. **1/3 part of the mark(s) of each question will be deducted for each wrong answer.** A wrong answer means an incorrect answer or more than one answers for any question.
8. **Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.**
9. **If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.**
10. * **After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.**
11. **A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.**
12. **Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt with as per rules.**

Warning : If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would be liable to be prosecuted under **Rajasthan Public Examination (Measures for Prevention of Unfair means in Recruitment) Act, 2022 & any other laws applicable and Commission's Rules-Regulations.** Commission may also debar him/her permanently from all future examinations.

उत्तर–पत्रक में दो प्रतियाँ हैं – मूल प्रति और कार्बन प्रति। परीक्षा समाप्ति पर परीक्षा कक्ष छोड़ने से पूर्व परीक्षार्थी उत्तर–पत्रक की दोनों प्रतियाँ वीक्षक को सौंपेंगे, परीक्षार्थी स्वयं कार्बन प्रति अलग नहीं करें। वीक्षक उत्तर–पत्रक की मूल प्रति को अपने पास जमा कर, कार्बन प्रति को मूल प्रति से कट लाइन से मोड़ कर सावधानीपूर्वक अलग कर परीक्षार्थी को सौंपेंगे, जिसे परीक्षार्थी अपने साथ ले जायेंगे। परीक्षार्थी को उत्तर–पत्रक की कार्बन प्रति चयन प्रक्रिया पूर्ण होने तक सुरक्षित रखनी होगी एवं आयोग द्वारा माँगे जाने पर प्रस्तुत करनी होगी।

1. The condition for uniform flow is
(1) change of velocity with respect to position at a specific time is zero
(2) change of velocity with respect to position at a specific time is non zero
(3) change of velocity with respect to time at a specific position is zero
(4) change of velocity with respect to time at a specific position is non zero
(5) Question not attempted

2. The water flows with a velocity of 1.5 m/s in a pipe of length 2500 m and of diameter 500 mm. A valve available at the end of the pipe is closed in 25 seconds, which leads to (take the value of velocity of pressure wave produced due to water hammer (C)= 1000 m/s) :
(1) Water hammers due to sudden closure of valve
(2) Water hammers due to gradual closure of valve
(3) No water hammering due to sudden closure of valve
(4) No water hammering due to gradual closure of valve
(5) Question not attempted

3. It is usual to designate the frictional resistance to flow in a pipe by Darcy-Weisbach equations as

$$h_f = \frac{4flV^2}{2gd}$$

For laminar viscous flow (Re < 2000) through a circular pipe, the friction factor varies inversely with Reynolds (Re) number as the relation f :
(1) 8/Re (2) 16/Re
(3) 32/Re (4) 64/Re
(5) Question not attempted

4. The force exerted by a jet of water on a stationary inclined plate (angle Θ) in the direction of the jet is given by
(1) $F_x = \rho aV^2$
(2) $F_x = \rho aV^2 \sin^2\Theta$
(3) $F_x = \rho aV^2(1 + \cos\Theta)$
(4) $F_x = \rho aV^2(1 + \sin\Theta)$
(5) Question not attempted

5. Find the incorrect statement about the Navier-Stokes equation ?
(1) The Navier-Stokes equation is based on the conservation of momentum
(2) The Navier-Stokes equation is valid for homogeneous and isotropic fluids
(3) The Navier-Stokes equation is valid for Stokesian fluids
(4) The Navier-Stokes equation is valid for Non-Newtonian fluids
(5) Question not attempted

6. In fluid mechanics the Euler's Number is the ratio of
(1) Inertia force to viscous force
(2) Inertia force to gravity force
(3) Inertia force to pressure force
(4) Square root of the ratio of the inertia force to the pressure force
(5) Question not attempted

7. At the vena contracta, the velocity of flow is :

(1) $\sqrt{2gh}$ (2) $\sqrt{\frac{2g}{h}}$

(3) $\sqrt{2g} \times h$ (4) $C_d \times \sqrt{2gh}$

(5) Question not attempted

8. When applying dimensional analysis to fluid flow problems, what does the term "Buckingham Pi theorem" refer to ?

(1) A method for determining the number of dimensionless groups in a problem.

(2) A technique for solving Navier-Stokes equations.

(3) A theorem describing the behaviour of ideal gases.

(4) A law governing the conservation of energy in fluid dynamics.

(5) Question not attempted

9. If 'A' is the area immersed in liquid whose specific weight is "w" and $\bar{h}$ is the height of centre of gravity of the immersed surface from free surface of water, then total pressure force "F" is given by

(1) $F = wA^2\bar{h}$ (2) $F = w^2A\bar{h}$

(3) $F = wA\bar{h}^2$ (4) $F = wA\bar{h}$

(5) Question not attempted

10. In a four bar chain or quadric cycle chain

(1) Each of the four pair is a turning pair

(2) One is turning pair and three are sliding pair

(3) Three are turning pair and one is sliding pair

(4) Each of the four pair is a sliding pair

(5) Question not attempted

11. A simple mechanism consists of 11 simple revolute joints and 9 links. What is the degree of freedom of the mechanism ?

(1) 0 (2) 1

(3) 2 (4) 3

(5) Question not attempted

12. Which of the following is not an example of higher pair ?

(1) Wheel rolling on a surface

(2) Cam and follower pair

(3) Tooth gears

(4) Turning of Nut on a screw

(5) Question not attempted

13. Which of the following is third inversion of slider crank chain mechanism ?

(1) Reciprocating engine

(2) Rotary engine

(3) Oscillating cylinder engine

(4) Hand pump

(5) Question not attempted

14. The angle between the direction of the follower motion and a normal to the pitch curve is called :

(1) Pitch angle

(2) Prime angle

(3) Base angle

(4) Pressure angle

(5) Question not attempted

15. Which of the following is a double disc cam, that has two disc being keyed together and are in constant touch with the two rollers of a follower ?

(1) Conjugate cam

(2) Radial cam

(3) Spiral cam

(4) Spherical cam

(5) Question not attempted

16. Two mating spur gears have 40 and 120 teeth respectively. The pinion rotates at 1200 rpm and transmits a torque of 20 Nm. The torque transmitted by the gear is :

(1) 6 Nm

(2) 20 Nm

(3) 40 Nm

(4) 60 Nm

(5) Question not attempted

17. The velocity of the belt for maximum power is

Where, T = maximum tension in belt

m = mass of the belt in kg per metre length

(1) $\sqrt{\frac{T}{3m}}$

(2) $\sqrt{\frac{T}{4m}}$

(3) $\sqrt{\frac{T}{5m}}$

(4) $\sqrt{\frac{T}{6m}}$

(5) Question not attempted

18. The flywheel of a steam engine has a radius of gyration of 1 m and mass 2500 kg. The starting torque of the steam engine is 1500 N-m and may be assumed constant. The angular acceleration of the flywheel shall be

(1) 0.6 rad/sec^2

(2) 0.5 rad/sec^2

(3) 0.4 rad/sec^2

(4) 0.8 rad/sec^2

(5) Question not attempted

19. In a governor if the equilibrium speed is constant for all radii of rotation of balls, the governor is

(1) isochronous (2) stable

(3) inertia (4) unstable

(5) Question not attempted

20. The rotor of a ship rotates in clockwise direction when viewed from the stern and the ship takes a left turn. The effect of the gyroscopic couple acting on it will be

(1) to raise the bow and stern

(2) to lower the bow and stern

(3) to raise the bow and lower the stern

(4) to lower the bow and raise the stern

(5) Question not attempted

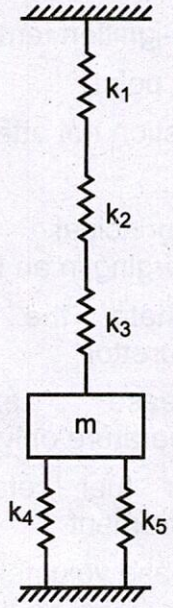
21. If for a screw, α is helix angle, ϕ is friction angle and μ is coefficient of friction then the condition for the screw to be self locking is

(1) $\alpha > \phi$ (2) $\phi > \alpha$

(3) $\mu > \tan \alpha$ (4) $\mu = \text{cosec } \alpha$

(5) Question not attempted

22. For the system shown in figure, if stiffness k_1 = 2000 N/m; k_2 = 1000 N/m, k_3 = 2000 N/m; $k_4 = k_5$ = 500 N/m, the effective stiffness of the system shall be



(1) 5250 N/m (2) 333.3 N/m
(3) 1000 N/m (4) 1500 N/m
(5) Question not attempted

23. The ratio of the maximum displacement of the forced vibration to the deflection due to static force is termed as
(1) Damping factor
(2) Damping coefficient
(3) Magnification factor
(4) Logarithmic decrement
(5) Question not attempted

24. In a spring-mass-damper system subjected to harmonic excitation, the phase angle at resonance is :
(1) 0° (2) 45°
(3) 90° (4) 180°
(5) Question not attempted

25. The efficiency of a screw jack is given by _____, where α is helix angle and ϕ is angle of friction
(1) $\frac{\tan(\alpha+\phi)}{\tan\alpha}$ (2) $\frac{\tan\alpha}{\tan(\alpha+\phi)}$
(3) $\frac{\tan(\alpha-\phi)}{\tan\alpha}$ (4) $\frac{\tan\alpha}{\tan(\alpha-\phi)}$
(5) Question not attempted

26. The natural frequency of an undamped vibrating system is 100 rad/s. A damper with a damping factor of 0.8 is introduced into the system. Find the frequency of vibration of the damped system (in rad/s).
(1) 60 (2) 75
(3) 80 (4) 100
(5) Question not attempted

27. In an under-damped vibration system, the logarithmic decrement represents :
(1) Ratio of successive amplitudes
(2) Frequency of oscillation
(3) Phase angle
(4) Energy loss per cycle
(5) Question not attempted

28. In a vibration isolation system, if $w/w_n > \sqrt{2}$, then for all the values of the damping factors, the transmissibility will be
(1) Greater than unity
(2) Equal to unity
(3) Less than unity
(4) Zero
(5) Question not attempted

29. The speed at which the shaft runs so that the additional deflection of the shaft from the axis of rotation becomes _____ is known as critical or whirling speed.

(1) Zero (2) Minimum

(3) Maximum (4) Infinite

(5) Question not attempted

30. Which of the following would reduce the tendency of knocking in I.C. Engine ?

(1) Higher self-ignition temperature of the fuel and a higher preflame reactivity

(2) Lower self-ignition temperature of the fuel and a lower preflame reactivity

(3) Higher self-ignition temperature of the fuel and a lower preflame reactivity

(4) Lower self-ignition temperature of the fuel and a higher preflame reactivity

(5) Question not attempted

31. The ignition delay in a CI engine is the time between :

(1) End of injection and end of combustion

(2) Start of injection and visible flame

(3) Start of injection and start of combustion

(4) Start of compression and start of ignition

(5) Question not attempted

32. Which property of diesel fuel most affects the starting of vehicle in cold weather ?

(1) Cetane number

(2) Flash point

(3) Auto-ignition temperature

(4) Pour point

(5) Question not attempted

33. The principal objective of supercharging in an I.C. engine is to

(1) eliminate the need for a carburettor

(2) decrease exhaust gas temperature only

(3) lower fuel cetane or octane requirement

(4) increase volumetric efficiency

(5) Question not attempted

34. Which type of lubrication method is not used in wet sump systems ?

(1) Splash lubrication

(2) Pressure lubrication

(3) Mist lubrication

(4) Combination of splash and pressure

(5) Question not attempted

35. In the "Perfect Scavenging" process the incoming fresh charge

(1) mixes completely with residual gases

(2) remains separate and pushes products ahead of it

(3) short-circuits straight to exhaust

(4) burns partially during transfer

(5) Question not attempted

36. The role of thermostat in a cooling system is to

(1) Mix oil and coolant

(2) Regulate coolant flow based on temperature

(3) Increase radiator pressure

(4) Cool the oil

(5) Question not attempted

37. A 4-stroke engine has a brake power of 15 kW and consumes 1.8 kg of fuel per hour. Calculate the brake specific fuel consumption (BSFC).

(1) 8.33 kWh/kg (2) 0.10 kg/kWh

(3) 0.12 kg/kWh (4) 3.18 kWh/kg

(5) Question not attempted

38. What are the effects on the emission after adding exhaust gas recirculation (EGR) in a diesel engine ?

(1) NOx decreases; HC and particulates increase

(2) NOx increases; CO decreases

(3) NOx and soot both decrease

(4) HC decreases; CO_2 increases

(5) Question not attempted

39. One tonne of refrigeration is conventionally taken as

(1) 105 kJ/min (2) 150 kJ/min

(3) 210 kJ/min (4) 3.5 kJ /min

(5) Question not attempted

40. A Carnot refrigerator operates between 270 K and 310 K. What is its COP ?

(1) 6.75 (2) 7.75

(3) 6.25 (4) 5.75

(5) Question not attempted

41. Subcooling of liquid refrigerant before throttling in an actual Vapour Compression Refrigeration Cycle results in :

(1) Decreased COP

(2) Increased compressor work

(3) Increased refrigerating effect

(4) Decreased evaporator pressure

(5) Question not attempted

42. Which of the following is not the effect of decreasing evaporator temperature in vapour compression cycle ?

(1) Increase in refrigeration effect

(2) Increase in the specific volume of suction vapour

(3) Decrease in volumetric efficiency

(4) Increase in compressor work

(5) Question not attempted

43. Match List-I (Refrigerant) with List-II (Chemical Names) and choose the correct option

List – I	List – II
A. R-11	i. Dichloro-difluoro methane
B. R-12	ii. Trichloro-monofluoro methane
C. R-22	iii. Monochloro difluoro methane
D. R-114	iv. Tetra-fluoro dichloroethane

	A	B	C	D
(1)	ii	iii	i	iv
(2)	i	ii	iii	iv
(3)	iii	i	ii	iv
(4)	ii	i	iii	iv

(5) Question not attempted

44. Which refrigerant is widely used in Ice plants ?
(1) R-12 (2) R-13
(3) R-21 (4) Ammonia
(5) Question not attempted

45. Which component is absent in a vapour absorption refrigeration system ?
(1) Condenser (2) Evaporator
(3) Absorber (4) Compressor
(5) Question not attempted

46. Which of the following equation describes the relation between Sensible heat factor (SHF) and θ, where θ is the slope of the SHF line on the psychrometric chart ?
(1) SHF = $1/(1 - \tan\theta)$
(2) SHF = $1 + \tan\theta$
(3) SHF = $1/(1 + \tan\theta)$
(4) SHF = $1 - \tan\theta$
(5) Question not attempted

47. Best suitable air speed at which occupants remain comfortable is
(1) 1 m/min (2) 15 m/min
(3) 150 m/min (4) 1500 m/min
(5) Question not attempted

48. In sensible cooling, which of the following parameter decreases ?
(1) Dry bulb temperature
(2) Specific humidity
(3) Relative humidity
(4) Dew point temperature
(5) Question not attempted

49. Dry-bulb, wet-bulb and dew-point temperatures coincide only when air is
(1) unsaturated (2) saturated
(3) super-heated (4) sub-cooled
(5) Question not attempted

50. Toe-in is defined as the condition when :
(1) The front edges of the front wheels are closer than the rear edges
(2) The front edges of the front wheels are farther apart than the rear edges
(3) Rear wheels are closer than front wheels
(4) Wheels are inclined inward at the top
(5) Question not attempted

51. Which of the following is MacPherson Strut Assembly of Front Suspension System ?
(1) Double wishbone suspension system
(2) Single wishbone suspension system
(3) Parallel and Equal wishbone suspension system
(4) Spring Damper suspension system
(5) Question not attempted

52. The primary circuit in a battery ignition system consists of :
(1) High tension lead, Spark plug, rotor arm, distributor
(2) Battery, ignition switch, primary winding, contact breaker
(3) Distributor cap, high-tension wires, spark plug
(4) Magneto, condenser, cam
(5) Question not attempted

53. In a simple stage gas turbine plant ,if T_1 is the minimum temperature and T_3 is the maximum temperature then what is the work ratio in terms of pressure ratio, r_p

(1) $1 - \left(\frac{T_3}{T_1}\right) r_p^{\frac{\gamma-1}{\gamma}}$ (2) $1 - \left(\frac{T_1}{T_3}\right) r_p^{\frac{\gamma-1}{\gamma}}$

(3) $1 - \left(\frac{T_1}{T_3}\right) r_p^{\frac{\gamma}{\gamma-1}}$ (4) $1 - \left(\frac{T_1}{T_3}\right) r_p^{\frac{1}{\gamma}}$

(5) Question not attempted

54. Which of the following is incorrect for gas turbine power plant ?

(1) Gas turbine power plant is smaller in size as compared to an equivalent steam power plant.

(2) Gas turbine power plant is smaller in weight as compared to an equivalent steam power plant.

(3) Gas turbine power plant requires less water as compared to a condensing steam power plant.

(4) The initial cost and operating cost of the Gas turbine power plant is higher than an equivalent steam power plant.

(5) Question not attempted

55. A diesel engine develops 400 H.P. to overcome friction and delivers 2000 BHP. Find the Mechanical efficiency.

(1) 80% (2) 83%

(3) 20% (4) 17%

(5) Question not attempted

56. The maximum (peak) demand on a thermal power plant of 60 MW capacity is 50 MW. The loads having maximum demands of 25 MW, 20 MW, 8 MW and 5 MW are connected to the power station. Determine Demand factor for the plant.

(1) 1.16 (2) 0.16

(3) 0.14 (4) 0.86

(5) Question not attempted

57. Which of the following is <u>NOT considered</u> a desirable characteristic for a modern steam-power station ?

(1) High overall thermal efficiency

(2) Capability to burn coal with considerable ash content

(3) Low water requirement per kWh generated

(4) High specific fuel consumption

(5) Question not attempted

58. Why are zirconium alloys favoured as structural material in advanced reactors ?

(1) High gamma shielding

(2) Low neutron absorption

(3) High neutron absorption

(4) High electrical conductivity

(5) Question not attempted

59. Which of the following is expressly named as a moderator material alongside graphite and heavy water ?

(1) Lead (2) Beryllium

(3) Boron carbide (4) Zircaloy

(5) Question not attempted

60. Which of the following is not desirable by moderator used in nuclear reactor ?

(1) Moderator should have high thermal conductivity

(2) Moderator should be unstable under heat and radiation

(3) Moderator should provide good resistance to corrosion

(4) Moderator should be able to slow down neutrons

(5) Question not attempted

61. Kaplan turbines are most suitable for :

(1) Low head and high discharge

(2) High head and low discharge

(3) Medium head and medium flow

(4) Very high head with small flow

(5) Question not attempted

62. Which of the following is the critical value of cavitation factor ?

where H_a = Atmospheric pressure head in meter of water, H_v = Vapour pressure in meter of water corresponding to the water temperature, H = Working head of turbine and h = Height of turbine outlet above tailrace level in metres.

(1) $(H_a - H_v - h)/H$

(2) $(H_v - H_a - h)/H$

(3) $(h - H_a - H_v)/H$

(4) $(H_a - H_v + h)/H$

(5) Question not attempted

63. In power plant, the Load factor is the ratio of :

(1) Average load to connected load

(2) Maximum demand to connected load

(3) Average load to maximum demand

(4) Installed capacity to maximum demand

(5) Question not attempted

64. Base load power plants generally have :

(1) Low capital cost and high fuel cost

(2) High fuel cost and high flexibility

(3) Low operating cost and continuous supply of the load

(4) Intermittent operation and poor efficiency

(5) Question not attempted

65. A point is subjected to three equal tensile stresses (σ) which are mutually perpendicular. The Poisson's ratio and Young's modulus are ν and E respectively. The strain in direction of stress is

(1) $\frac{\sigma}{E} + \frac{2\nu\sigma}{E}$ (2) $\frac{\sigma}{E} - \frac{2\nu\sigma}{E}$

(3) $\frac{\sigma}{E} - \frac{\nu\sigma}{E}$ (4) $\frac{\sigma}{E} + \frac{3\nu\sigma}{E}$

(5) Question not attempted

66. Total area under the stress-strain curve is termed as

(1) Modulus of Hardness

(2) Modulus of Toughness

(3) Modulus of Elasticity

(4) Modulus of Rigidity

(5) Question not attempted

67. The point of contra flexure is a point where;

(1) Shear force changes sign

(2) Bending moment changes sign

(3) Shear force is maximum

(4) Bending moment is maximum

(5) Question not attempted

68. A cantilever of length L carries a point load W at its free end. The downward deflection at the free end will be equal to _____.

Where E is modulus of elasticity & I is area moment of inertia

(1) $\frac{WL^3}{8EI}$

(2) $\frac{WL^3}{3EI}$

(3) $\frac{5WL^3}{384EI}$

(4) $\frac{WL^3}{48EI}$

(5) Question not attempted

69. In power transmission shafts, the polar moment of inertia of shaft has been doubled. What torque in relation to the original torque will then be required to produce the same angle of twist ?

(1) One-Fourth (2) One-Half

(3) Double (4) Same

(5) Question not attempted

70. The crippling load according to Euler's theory of long column, when one end of column is fixed and other end is free is equal to _____.

Where E is modulus of Elasticity, I is area moment of inertia and l is length of column.

(1) $4\pi^2 EI/l^2$ (2) $\pi^2 EI/4l^2$

(3) $\pi^2 EI/l^2$ (4) $2\pi^2 EI/l^2$

(5) Question not attempted

71. The fatigue or endurance limit of a material is defined as :

(1) The maximum stress that a material can withstand without yielding under static loading.

(2) The maximum amplitude of completely reversed stress that a standard specimen can sustain for an unlimited number of cycles without fatigue failure.

(3) The stress corresponding to fracture during tensile testing.

(4) The maximum compressive stress a material can bear without buckling.

(5) Question not attempted

72. Two shafts A and B are made up of same material. The diameter of shaft B is twice that of shaft A. The ratio of torque transmitted by shaft A to that of shaft B shall be

(1) 1/2 (2) 1/4

(3) 1/8 (4) 1/16

(5) Question not attempted

73. Which of the following is not an advantage of clamp coupling ?

(1) Easy to assemble and dismantle

(2) Suitable for shock loads

(3) Can be easily removed without shifting shaft in axial direction

(4) Has small diametral dimensions as compared to flange coupling

(5) Question not attempted

74. Which of the following statement is incorrect for taper roller bearings ?

(1) It is necessary to use two taper roller bearings on the shaft to balance the axial force

(2) It is necessary to adjust the actual position of the bearing with preload

(3) Taper roller bearing is not affected by misalignment between the axes of the shaft and the housing bore

(4) Taper roller bearing consists of Rolling elements in the form of a frustum of cone

(5) Question not attempted

75. Which of the following is not a category of brakes ?

(1) Rim types with internal contracting shoe brake

(2) Band types brake

(3) Disk or axial types brakes

(4) Rim types with external contracting shoe brake

(5) Question not attempted

76. In the formation of Lewis equation for toothed gearing, it is assumed that tangential tooth load acts on the

(1) Tip of the tooth

(2) Pitch point

(3) Root of the tooth

(4) Whole face of the tooth

(5) Question not attempted

77. Atom diameter, d of BCC crystal structure is _____,

(where 'a' is lattice parameter)

(1) a (2) $\sqrt{\frac{3}{2}}a$

(3) $\frac{\sqrt{3}}{2}a$ (4) $\frac{\sqrt{2}}{3}a$

(5) Question not attempted

78. An important property of a dislocation is its ___, which indicates the extent of lattice displacement caused by the dislocation.

(1) Burger's Vector

(2) Degrees of freedom

(3) Space lattice

(4) Fibre reinforcement

(5) Question not attempted

79. Consider the following regarding their crystal structure –

(a) Aluminium

(b) Copper

(c) Molybdenum

(d) Zinc

Which of these belong to face centered cubic (FCC) structure ?

(1) (a) and (b) only

(2) (a) and (c) only

(3) (b) and (c) only

(4) (a), (b) and (c) only

(5) Question not attempted

80. Normalizing may be defined as heating the steel to _____ phase and cooling it in air.

(1) Pearlite (2) Ferrite

(3) Cementite (4) Austenite

(5) Question not attempted

81. A _____ phase diagram is obtained when two metals are completely soluble in the liquid state but either partly or completely insoluble in the solid state.

(1) Monotectic (2) Eutectic

(3) Peritectic (4) Eutectoid

(5) Question not attempted

82. When a variation in hardness on the surface of a hardened steel is obtained, the defect is called as :-

(1) Oxidation

(2) Soft Spots

(3) Overheating

(4) Quench Cracking

(5) Question not attempted

83. Stainless steels are highly resistant to corrosion in various environments, primarily due to the presence of which of the following alloying element ?

(1) Nickel (Ni)

(2) Chromium (Cr)

(3) Molybdenum (Mo)

(4) Carbon (C)

(5) Question not attempted

84. Which of the following phase of steel is NOT present in the Iron-Carbon phase diagram –

(1) Ferrite (2) Cementite

(3) Austenite (4) Martensite

(5) Question not attempted

85. _____ measurements are carried out with bevel protractor and sine bar.

(1) Angular

(2) Linear

(3) Angular and linear both

(4) Neither Angular nor Linear

(5) Question not attempted

86. In a limit gauge, which of the following statements is correct as per Taylor's Principle ?

(1) GO gauge should check maximum material condition.

(2) NO-GO gauge should check maximum material condition.

(3) GO gauge should check minimum material condition.

(4) NO-GO gauge is used to measure length.

(5) Question not attempted

87. In a hole and shaft assembly, hole is specified as $30^{+0.00}_{+0.02}$ mm and shaft as $30^{-0.02}_{-0.05}$ mm. What is the allowance for this fit ?

(1) + 0.07 mm (2) + 0.02 mm

(3) + 0.04 mm (4) 0.00 mm

(5) Question not attempted

88. Chills are used in casting to :

(1) Increase the solidification time

(2) Facilitate easy removal of the pattern

(3) Obtain directional solidification

(4) Avoid blowholes

(5) Question not attempted

89. In CNC programming, absolute positioning and incremental positioning differs as

(1) Absolute positioning defines the next location relative to the current location, while incremental positioning is with respect to the origin.

(2) Both absolute and incremental positioning define positions relative to the origin.

(3) Absolute positioning defines locations with respect to the origin, whereas incremental positioning defines locations relative to the current position.

(4) Both absolute and incremental positioning define positions relative to the tool length.

(5) Question not attempted

90. What does the grade of grinding wheel indicate ?

(1) Grit size of abrasive particles

(2) Hardness of abrasive material

(3) Hardness of the grinding wheel

(4) Speed at which the wheel can rotate

(5) Question not attempted

91. In which of the Milling operation several plain milling cutters of same or different diameters and width may be used at the same time for production of several different parallel horizontal surfaces on the workpieces ?

(1) Gang Milling (2) Side Milling

(3) Face Milling (4) End Milling

(5) Question not attempted

92. Boring operation is primarily used to

(1) Create external threads

(2) Enlarge an existing hole

(3) Cut grooves on a shaft

(4) Perform surface finishing

(5) Question not attempted

93. Broaching is also similar to ____ with multi-tooth tool that reciprocates to do the cutting.

(1) Milling (2) Sawing

(3) Honing (4) Lapping

(5) Question not attempted

94. A very large nose radius in single point cutting tool may cause :

(1) Reduced cutting force

(2) Tool chatter

(3) Improved chip flow

(4) Better cooling

(5) Question not attempted

95. The fourth term of tool signature, under ASA system is

(1) back rake angle

(2) side rake angle

(3) end relief angle

(4) side relief angle

(5) Question not attempted

96. Following type of chip formed when machining ductile materials at low temperature

(1) continuous

(2) discontinuous

(3) continuous with built up edge

(4) no formation of chip

(5) Question not attempted

97. Shear angle φ is defined as the angle between shear plane and ____.

(1) Rake face

(2) Direction of tool travel

(3) Normal to rake face

(4) Chip flow line

(5) Question not attempted

98. The main objective of using a flux in welding is to :

(1) Increase temperature

(2) Remove heat quickly

(3) Prevent oxidation and remove impurities

(4) Provide filler material

(5) Question not attempted

99. Where is the die block mounted in the assembly ?

(1) Upper shoe (2) Guide posts

(3) Lower shoe (4) Punch holder

(5) Question not attempted

100. If the output of a system is increased by 20% and the input is reduced by 20%, then the productivity of the system will :

(1) increase by 20%

(2) increase by 25%

(3) increase by 50%

(4) remain unchanged

(5) Question not attempted

101. The relationship between production and productivity :

(1) Production and productivity are interchangeable terms.

(2) Production is absolute; productivity is relative to input.

(3) Productivity increases only if production increases.

(4) Production is always higher than productivity.

(5) Question not attempted

102. A machine costs ₹ 50,000, and it depreciates at 20% per year. Using the declining balance method, what is its value at the end of 2 years ?

(1) ₹ 30,000

(2) ₹ 32,000

(3) ₹ 36,000

(4) ₹ 40,000

(5) Question not attempted

103. Which one of the following supply chain strategy is associated with just-in-time (JIT) or lean system :

(1) push-based

(2) pull-based

(3) push-pull

(4) push-push

(5) Question not attempted

104. An oil engine manufacturer purchases lubricants at the rate of ₹ 84 per piece from a vendor. The requirements of these lubricants are 900 per year. What should be the ordering quantity per order, if the cost per placement of an order is ₹ 32 and inventory carrying charges per rupee per year is 10 paise ?

(1) 83 lubricants

(2) 166 lubricants

(3) 42 lubricants

(4) 21 lubricants

(5) Question not attempted

105. If there are 2 jobs to be performed one at a time on 3 machines, where the order of machines for each job can vary, the total number of possible sequences is :

(1) 2 (2) 6

(3) 8 (4) 12

(5) Question not attempted

106. Which of the following is essential output in an MRP system ?

(1) Product structure (BOM) file of components which go into each end product

(2) Order release data to CRP for load profiles

(3) Inventory status file of on-hand items

(4) MPS of end items required

(5) Question not attempted

107. Which of the following is considered a micro motion study technique in Industrial Engineering ?

(1) Work Sampling

(2) String Diagram

(3) SIMO Chart

(4) Gantt Chart

(5) Question not attempted

108. For an activity in a PERT network, the optimistic time is 10 days, pessimistic time is 16 days, and most likely time is 13 days. The expected time (in days) and standard deviation (in days) of the activity are :

(1) Expected time = 13 and standard deviation = 2

(2) Expected time = 12 and standard deviation = 1

(3) Expected time = 14 and standard deviation = 2

(4) Expected time = 13 and standard deviation = 1

(5) Question not attempted

109. Which of the following is used to identify part families in Group Technology ?

(1) Production flow analysis

(2) Materials Requirement Planning (MRP)

(3) Enterprise Resource Planning (ERP)

(4) Bill of materials

(5) Question not attempted

110. Which of the following is a type of standardization, which means designing a product in parts ?

(1) Modular design

(2) Value design

(3) Concurrent design

(4) Robust design

(5) Question not attempted

111. According to patent law, which of the following is NOT a necessary requirement for an invention to be patented ?

(1) The invention must be useful to someone in some context.

(2) The invention must be novel, meaning it is not publicly known through products, publications, or prior patents.

(3) The invention must be nonobvious, meaning it should not be obvious to someone skilled in the field.

(4) The invention must be commercially successful at the time of application.

(5) Question not attempted

112. While conducting product analysis which of the following is categorized under economic analysis ?

(1) Aesthetic aspect analysis

(2) Durability aspects analysis

(3) Break-even analysis

(4) Dependability aspects analysis

(5) Question not attempted

113. The arrival rate at a service counter follows a Poisson distribution with a mean of 4 per hour, and the service rate is 5 per hour. What is the probability that the system is idle ?

(1) 0.20 (2) 0.25

(3) 0.50 (4) 0.80

(5) Question not attempted

114. Which of the following defines Zero sum game ?

(1) A game in which the gains of one player are the losses of other player.

(2) A game in which the algebraic sum of gains of both players is positive.

(3) A game in which the algebraic sum of gains of both players is negative.

(4) A game in which the gains of one player is more than the losses of other player.

(5) Question not attempted

115. In game theory, if a game has no saddle point, then the optimal strategy is determined by :

(1) Dominance Rule

(2) Minimax Theorem

(3) Mixed Strategy

(4) Nash Equilibrium

(5) Question not attempted

116. In operation research while comparing Simplex problem of Maximisation case and Minimisation case, which of the following is not related to Minimisation case problem ?

(1) The relationship between variables and constraints is linear.

(2) The coefficients of variables may be positive or negative or zero.

(3) Structural constraints are needed.

(4) To convert inequalities into equations, slack variables are added.

(5) Question not attempted

117. In operation research, if certain sets of rules (which may not necessarily lead to an optimal solution) are applied consistently to simplify or facilitate the solution of a problem, the model is known as :

(1) Linear Programming Model

(2) Simulation Model

(3) Heuristic Model

(4) Dynamic Programming Model

(5) Question not attempted

118. With m constraints and n variables, the maximum number of basic solutions to the standard linear program is finite and is given by :-

(1) $\binom{n}{m} = \frac{n!}{m!(n-m)!}$

(2) $\binom{n}{m} = \frac{m!}{n!(n-m)!}$

(3) $\binom{n}{m} = \frac{n!}{m!(m-n)!}$

(4) $\binom{m}{n} = \frac{n!}{m!(n-m)!}$

(5) Question not attempted

119. In linear programming in operation research, an alternate optimal solution is indicated whenever there exists a non-basic variable whose relative profit is _____ in the optimal tableau.

(1) Positive value

(2) Zero

(3) Negative value

(4) Positive and negative both

(5) Question not attempted

120. In regenerative Rankine cycle, some steam is extracted from the turbine to :

(1) Preheat feedwater

(2) Cool the condenser

(3) Increase the entropy of steam

(4) Increase boiler pressure

(5) Question not attempted

121. If a reversible heat pump working between two reservoirs at 400 K and 300 K removes 300 kJ of heat from the cold space, how much heat does it deliver to the hot reservoir ?

(1) 400 kJ (2) 700 kJ

(3) 500 kJ (4) 600 kJ

(5) Question not attempted

122. Consider the following :

(a) Temperature

(b) Viscosity

(c) Thermal conductivity

(d) Enthalpy

Which of these properties of a system are intensive property ?

(1) (a) and (b)

(2) (a), (b) and (c)

(3) (a), (c) and (d)

(4) (a), (b), (c) and (d)

(5) Question not attempted

123. For an adiabatic process, the temperature and pressure are related as, $\frac{T_2}{T_1} =$

(1) $\left(\frac{P_2}{P_1}\right)^{\gamma-1}$

(2) $\left(\frac{P_2}{P_1}\right)^{\frac{1}{\gamma-n}}$

(3) $\left(\frac{P_2}{P_1}\right)^{\frac{\gamma-1}{\gamma}}$

(4) $\left(\frac{P_2}{P_1}\right)^{\frac{\gamma}{\gamma-1}}$

(5) Question not attempted

124. For the same maximum and minimum temperatures, which cycle will have the highest specific work output ?

(1) Carnot cycle

(2) Ideal Rankine cycle

(3) Modified Rankine cycle

(4) Binary vapour cycle

(5) Question not attempted

125. A mixture contains 0.3 kg water and 0.7 kg dry steam. What is the dryness fraction ?

(1) 0.30

(2) 0.50

(3) 0.70

(4) 0.80

(5) Question not attempted

126. The Effectiveness of heat exchanger is defined as

(1) Actual heat transfer/maximum possible heat transfer

(2) Maximum heat transfer/Actual heat transfer

(3) Heat capacity ratio

(4) NTU $\times$ C_{min}

(5) Question not attempted

127. Assertion (A) : A counter flow heat exchanger is thermodynamically more efficient than the parallel flow type.

Reason (R) : A counter flow heat exchanger has a lower LMTD for the same temperature conditions.

Select appropriate option :

(1) Both (A) and (R) are individually true, and (R) is the correct explanation of (A).

(2) Both (A) and (R) are individually true, but (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

(5) Question not attempted

128. Match List – I (Surface with Orientations) with List – II (Equivalent Emissivity) and select the correct answer :

List – I	List – II
A. Infinite large parallel planes	(a) ϵ_1
B. Body 1 completely enclosed by body 2 but body 1 is very small	(b) $\dfrac{1}{\frac{1}{\epsilon_1}+\frac{1}{\epsilon_2}-1}$
C. Two concentric spheres	(c) $\dfrac{1}{\frac{1}{\epsilon_1}+\left(\frac{1-\epsilon_2}{\epsilon_2}\right)\left(\frac{r_1}{r_2}\right)}$
D. Infinitely long concentric cylinders	(d) $\dfrac{1}{\frac{1}{\epsilon_1}+\left(\frac{1-\epsilon_2}{\epsilon_2}\right)\left(\frac{r_1}{r_2}\right)^2}$

	A	B	C	D
(1)	(a)	(c)	(d)	(b)
(2)	(b)	(a)	(d)	(c)
(3)	(b)	(a)	(c)	(d)
(4)	(b)	(c)	(d)	(a)

(5) Question not attempted

129. Lambert's cosine law applies to :

(1) Specular surface

(2) Transparent surface

(3) Diffuse surface

(4) Reflecting surface

(5) Question not attempted

130. Assertion (A) : If the heat flux in pool boiling over a horizontal surface is increased above the critical heat flux, the temperature difference between the surface and liquid decreases sharply.

Reason (R) : With increasing heat flux beyond the value corresponding to the critical heat flux, a stage is reached when the rate of formation of bubbles is so high that they start to coalesce and blanket the surface with a vapour film.

(1) Both (A) and (R) are individually true, and (R) is the correct explanation of (A).

(2) Both (A) and (R) are individually true, but (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

(5) Question not attempted

131. Heat transfer coefficients for a vapour condensing on a surface can be increased by promoting

(1) film condensation

(2) dropwise condensation

(3) rolling action

(4) convection

(5) Question not attempted

132. Which dimensionless number represents the ratio of kinematic viscosity to thermal diffusivity ?

(1) Reynolds number

(2) Prandtl number

(3) Nusselt number

(4) Grashoff number

(5) Question not attempted

133. In a regenerative Rankine cycle with multiple bleedings, increasing the number of feedwater heaters (ideal, no losses assumed) would theoretically result in :

(1) Increased cycle efficiency and increased net work output

(2) Decreased cycle efficiency and increased specific steam consumption

(3) Increased cycle efficiency but decreased net work output

(4) Decreased cycle efficiency but improved condenser heat rejection

(5) Question not attempted

134. For an infinitely long fin, temperature at the tip is :

(1) Equal to surrounding fluid temperature

(2) Equal to base temperature

(3) Half of base temperature

(4) Maximum possible value

(5) Question not attempted

135. An electric current cable is to be covered by a uniform sheathing of plastic (k = 0.2 W/mk). The convective film coefficient between the surface of the plastic sheathing and surrounding air is 15 W/m^2K. Calculate critical thickness of insulation.

(1) 13.33 mm (2) 75 mm

(3) 26.66 mm (4) 150 mm

(5) Question not attempted

136. The Radiation Intensity emitted by a black body is governed by

(1) Planck's law

(2) Kirchhoff's law

(3) Wien's Displacement law

(4) Fourier's law

(5) Question not attempted

137. For a composite wall consisting of three layers in series, which of the following statements is correct regarding the temperature drops across each layer ?

(1) Largest drop occurs across the layer with the highest conductivity.

(2) Largest drop occurs across the layer with the lowest resistance.

(3) Largest drop occurs across the layer with the highest resistance.

(4) Temperature drops are equal across all layers.

(5) Question not attempted

138. A composite wall has 3 layers each of 0.2 K / W thermal resistance. What is the total resistance ?

(1) 0.1 K / W (2) 0.2 K / W

(3) 0.6 K / W (4) 0.3 K / W

(5) Question not attempted

139. When the insulation thickness (r_i) is less than the critical radius (r_c), what happens to heat loss ?

(1) It decreases

(2) It remains constant

(3) It increases

(4) It becomes zero

(5) Question not attempted

140. The water at the inlet of the reaction turbine possess

(1) kinetic energy only

(2) pressure energy only

(3) both kinetic energy and pressure energy

(4) neither of kinetic energy and pressure energy

(5) Question not attempted

141. The specific speed of the turbine is the speed of

(1) geometrically similar turbine of unit power

(2) a turbine running at its design speed

(3) turbine having unit speed

(4) turbine with maximum efficiency

(5) Question not attempted

142. Which of the following is correct statement ?

(1) For radially outward flow machines the fluid loses its static head.

(2) For a radially inward flow machine the fluid gains its static head.

(3) In radial flow pumps or compressors the flow is always directed radially outward.

(4) In a radial flow turbine, flow is always directed radially outward.

(5) Question not attempted

143. Which of the following is true for the blade outlet angle (β) of impeller blades of a centrifugal pump ?

(1) Forward facing blades $\beta > 90°$

(2) Radial blades $\beta > 90°$

(3) Backward facing blades $\beta > 90°$

(4) Backward facing blades $\beta = 90°$

(5) Question not attempted

144. The function of casing in centrifugal pump is to

(1) Convert kinetic energy into pressure energy

(2) Increase flow rate

(3) Reduce friction

(4) Decrease NPSH

(5) Question not attempted

145. The specific speed of a centrifugal pump is defined as

(1) $N_S = N\, Q^{0.5}/H^{1.25}$

(2) $N_S = N\, Q^{0.5}/H^{2.5}$

(3) $N_S = N\, Q^{0.5}/H^{0.75}$

(4) $N_S = N\, Q^{0.5}/H^{1.5}$

(5) Question not attempted

146. The percentage of power saved in overcoming friction in pipes by using air vessel in lines of single acting reciprocating pump is :

(1) 84.8% (2) 92.3%

(3) 48.4% (4) 33.4%

(5) Question not attempted

147. The working of hydraulic Ram is based on

(1) Thermodynamics

(2) Bernoulli's equation

(3) Water hammer

(4) Viscous flow

(5) Question not attempted

148. Which equation represents the principle of conservation of mass in fluid flow ?

(1) Bernoulli's equation

(2) Continuity equation

(3) Euler's equation

(4) Navier Stokes equation

(5) Question not attempted

149. The venturimeter is used to measure

(1) Flow through the pipe

(2) Flow through canal

(3) Flow through river

(4) Flow through dam

(5) Question not attempted

150. "Intensity of pressure at a point in static fluid is equal in all directions" is related to

(1) Hydrostatic law

(2) Pascal's law

(3) Continuity equation

(4) Bernoulli's equation

(5) Question not attempted

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