*Asst. Engg. Mech. (GWD) Screening Test 2011.*

प्रश्न पुस्तिका / **QUESTION BOOKLET**

कोड / Code : **66**

विषय / Subject : **Asst. Engg. Mech. (GWD)**

110481

पुस्तिका में पृष्ठों की संख्या /
Number of Pages in Booklet : 24

Asst. Engg. Mech. (GWD)
**66** विषय कोड **A** बुकलेट सीरीज

पुस्तिका में प्रश्नों की संख्या /
Number of Questions in Booklet : 100

समय / Time : 2.00 घंटे / Hours              पूर्णांक / Maximum Marks : 100

## INSTRUCTIONS

1. Answer all questions.
2. All questions carry equal marks.
3. Only one answer is to be given for each question.
4. If more than one answers are marked, it would be treated as wrong answer.
5. Each question has four alternative responses marked serially as **1, 2, 3, 4**. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using **BLUE BALL POINT PEN**.
6. 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. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.)
7. The candidate should ensure that Series Code of the Question Paper Booklet and Answer Sheet must be same after opening the envelopes. In case they are different, a candidate must obtain another question paper of the same series. Candidate himself shall be responsible for ensuring this.
8. 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 as per rules.
9. Please circrctly fill your Roll Number in O.M.R. Sheet. 5 marks will be deducted for filling wrong or incomplete Roll Number.
10. If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English Version of the question, the English Version will be treated as standard.
     *Warning :* If a candidate is found copying or if any unauthorised material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted under Section 3 of the R.P.E. (Prevention of Unfairmeans) Act, 1992. Commission may also debar him/her permanently from all future examinations of the Commission.

## निर्देश

1. सभी प्रश्नों के उत्तर दीजिए ।
2. सभी प्रश्नों के अंक समान हैं ।
3. प्रत्येक प्रश्न का केवल एक ही उत्तर दीजिए।
4. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा ।
5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4 अंकित किया गया हैं। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर-पत्रक पर नीले बॉल प्वाइंट पेन से गहरा करना है ।
6. 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 । किसी भी प्रश्न से संबंधित गोले या बबल को खाली छोड़ना गलत उत्तर नहीं माना जायेगा।
7. प्रश्न-पत्र पुस्तिका एवं उत्तर पत्रक के लिफाफे की सील खोलने पर परीक्षार्थी यह सुनिश्चित कर लें कि उसके प्रश्न-पत्र पुस्तिका पर वही सीरीज अंकित है जो उत्तर पत्रक पर अंकित है। इसमें कोई भिन्नता हो तो वीक्षक से प्रश्न-पत्र की ही सीरीज वाला दूसरा प्रश्न-पत्र का लिफाफा प्राप्त कर लें। ऐसा न करने पर जिम्मेदारी अभ्यर्थी की होगी।
8. गोवाईल फोन अथवा इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित हैं। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।
9. कृपया अपना रोल नम्बर ओ.एम.आर. पत्रक पर सावधानी पूर्वक सही भरें । गलत अथवा अपूर्ण रोल नम्बर भरने पर 5 अंक कुल प्राप्तांको में से अनिवार्य रूप से काटे जाएंगे।
10. यदि किसी प्रश्न में किसी प्रकार की कोई मुद्रण या तथ्यात्मक प्रकार की त्रुटि हो तो प्रश्न के हिन्दी तथा अंग्रेजी रूपान्तरों में से अंग्रेजी रूपान्तर मान्य होगा।

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराई जायेगी और आर. पी. ई. (अनुचित साधनों की रोकथाम) अधिनियम, 1992 के नियम 3 के तहत कार्यवाही की जायेगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

AEME

1    Which one of the following laws of conservation forms the basis of continuity equation ?

    (1)    Conservation of energy

    (2)    Conservation of mass

    (3)    Conservation of momentum

    (4)    Conservation of moment of inertia

2    If from energy line, $V^2/2g$ is subtracted at every point, we get :

    (1)    Head Line         (2)    Hydraulic Grade Line

    (3)    Power line       (4)    Streamline

3    Hot wire anemometer is used to measure :

    (1)    Pressure in gases     (2)    Liquid discharge

    (3)    Pressure in Liquids     (4)    Gas velocities

4    The range of a projectile is maximum, when the angle of projection is :

    (1)    30°            (2)    45°

    (3)    60°            (4)    90°

5    Which one of the following statements is correct for pipes connected in series ?

    (1)    Same flow takes place through each pipe and the head loss across them is also same

    (2)    Different flows take place through each pipe but the head loss across them is same

    (3)    Same flow takes place through each pipe and head loss across the entire pipe is equal to the sum of head losses in the constituent pipes

    (4)    Different flow takes place through each pipe but the head loss across the entire pipe is equal to the sum of head losses in the constituent pipes

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6 Which one of the following statements does not characterize the fully developed laminar flow in a pipe ?

(1) Velocity profile does not change in the longitudinal direction

(2) Velocity profile across the pipe section is parabolic and maximum velocity occurs at the centre

(3) Pressure gradient in the direction of flow is constant and positive

(4) Pressure gradient in the direction of flow is constant and negative

7 The maximum efficiency of transmitting of power through a pipe is

(1) 25%                      (2) 66.66%

(3) 33.3%                    (4) 50%

8 Which one of the following statements is correct regarding the presence of the normal shock ?

(1) It exists in the convergent passage

(2) It always exists at the entry of the divergent passage

(3) It always exists at the exit of the divergent passage

(4) It exists anywhere in the divergent passage

9 The hydrodynamic boundary layer thickness is defined from the surface where the :

(1) Velocity equals the local external velocity

(2) Velocity equals the approach velocity

(3) Momentum equals 99% of the momentum of the free stream

(4) Velocity equals 99% of local external velocity

10 Which of the following is a case of steady state heat transfer ?

(1) I.C. Engine            (2) Air Preheater

(3) Heating of Building in winter (4) None of the above.

11 For pipes, laminar flow occurs when Reynolds number is :

    (1) Less than 2000       (2) Between 2000 and 4000

    (3) More than 4000      (4) Less than 4000

12 In a steady flow :

    (1) Streamlines and pathlines are identical but are different from streaklines

    (2) Streaklines and pathlines are identical but are different from streamlines

    (3) Streamlines, streaklines and pathlines can all be different from each other

    (4) None of the above

13 If two pumps identical in all respects and each capable of delivering a discharge of Q against head H are connected in series, the resulting discharge is :

    (1) 2Q against a head of 2H    (2) 2Q against a head of H

    (3) Q against a head of 2H,    (4) Q/2 against a head of 2H

14 If $h_s$ = height of inlet of pump from the sump water level,

    $h_{fs}$ = loss of head in the foot valve strainer and suction pipe,

    $H_a$ = Atmospheric pressure head

    $H_v$ = Vapour pressure head

    Then net positive suction head (NPSH) is expressed as :

    (1) $H_a - H_v - h_s - h_{fs}$    (2) $H_a - H_v + h_s + h_{fs}$

    (3) $H_a - H_v + h_s - h_{fs}$    (4) $H_a + H_v - h_s - h_{fs}$

15 The pressure in meters of oil (specific gravity 0.85) equivalent to 42.5 m of water is :

    (1) 42.5 m       (2) 50 m

    (3) 52.5 m      (4) 85 m

16 Which ... pump ?

    (1) Tl

    (2) It

    (3) It

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    (1)

    (3)

16 Which one of the following statements is true in case of reciprocating pump ?

   (1) The discharge is fluctuating and pulsating

   (2) It is used for small discharge through high heads

   (3) It requires large floor area and installation cost is high

   (4) The operation of reciprocating pump is smooth and without much noise. The maintenance cost is low

17 The fluid forces considered in Navier-Stokes equation are :

   (1) Gravity, pressure and viscous

   (2) Gravity, pressure and turbulent

   (3) Pressure, viscous and turbulent

   (4) Gravity, viscous and turbulent

18 The surge tank is used in pipe line

   (1) To reduce friction loss in pipe

   (2) To ensure uniform flow in pipe

   (3) To relieve the pressure due to water hammer

   (4) To reduce cavitations

19 Which one of the following conditions renders the aerofoil inoperative ?

   (1) When angle of attack is zero

   (2) When angle of attack is less than critical angle of attack

   (3) When angle of attack is equal to critical angle of attack

   (4) When angle of attack is slightly in excess to critical angle of attack

20 Pelton wheels are available in the following range of specific speed ($N_s$)

   (1) 8 – 30            (2) 380 – 950

   (3) 4 – 70            (4) 40 – 420

21  Which one of the following techniques will not increase the rate of heat conduction through a plane wall ?

    (1)  By using the material of wall having high thermal conductivity

    (2)  By increasing the surface area of the wall

    (3)  By making the wall thinner

    (4)  By making the wall thicker.

22  Thermal conductivity of a material may be defined as the :

    (1)  Quantity of heat flowing in one second through one centimeter cube of material when opposite faces are maintained at a temperature difference of 1°C.

    (2)  Quantity of heat flowing in one second through a slab of material of area one centimeter square, thickness 1 cm when its faces differ in temperature by 1°C.

    (3)  Heat conducted in unit time across unit area through unit thickness, when a temperature difference of unity is maintained between opposite faces.

    (4)  All the above

23  Which one of the following heat exchangers gives parallel straight line pattern of temperature distribution for both cold and hot fluid ?

    (1)  Parallel flow with unequal heat capacities

    (2)  Counter flow with equal heat capacities

    (3)  Parallel flow with equal heat capacities

    (4)  Counter flow with unequal heat capacities

24  The function of control rods in nuclear power plant is to:

    (1)  Control absorption of neutrons

    (2)  Control temperature

    (3)  Control the fuel consumption

    (4)  None of the above

25  Which

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    (2)  B
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    (3)  B
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    (4)  E
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28  Match
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    (B)

    (C)

    (D)

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    (2)

    (3)

    (4)

25  Which one of the following techniques will not improve fin effectiveness ?

(1)  By selecting the fin material which has high thermal conductivity

(2)  By selecting the shape and size of fin section which has high ratio of the perimeter to the cross-section area

(3)  By selecting the medium and mode which results in high convective heat transfer coefficient

(4)  By selecting the medium and mode which results in low convective heat transfer coefficient

26  Moderator of nuclear power plant is used to :

(1)  Reduce Temperature

(2)  Extract heat for nuclear reaction

(3)  Control the reaction

(4)  Cause collision with the fast moving neutrons to reduce their speed.

27  The shape factor of a hemispherical body placed on a flat surface with respect to itself is a -

(1)  Zero

(2)  0.25

(3)  0.5

(4)  1.0

28  Match the List-I and List-II and select the correct answer by using the codes given below :

| | *List-I* | | *List-II* |
|---|---|---|---|
| (A) | Reynolds Number | (X) | Dimensionless heat transfer coefficient |
| (B) | Nusselt Number | (Y) | Governs relative thickness of the velocity and the thermal boundary layers |
| (C) | Grashof Number | (Z) | Governs the flow regime in forced convection |
| (D) | Prandtl Number | (T) | Governs the flow regime in natural convection |

|     | (A) | (B) | (C) | (D) |
|-----|-----|-----|-----|-----|
| (1) | (X) | (Y) | (Z) | (T) |
| (2) | (T) | (X) | (Y) | (Z) |
| (3) | (Z) | (X) | (T) | (Y) |
| (4) | (Z) | (Y) | (X) | (T) |

29  In steam power plants, the ratio of isentropic heat drop in the prime mover to the amount of heat supplied per unit mass of steam is known as :

(1)  Stage efficiency

(2)  Degree of reaction

(3)  Rankine efficiency

(4)  Relative efficiency

30  A list representing the thermal resistances of a heat exchanger is given below:

(A)  Convection resistance of the surface of separating wall towards the hot fluid

(B)  Convection resistance of the surface of separating wall towards the cold fluid

(C)  Convection resistance of the surface of separating wall

Which of these will be used to determine the overall resistance of heat exchanger when the wall thickness of the separating wall is small and the thermal conductivity of wall material is very high?

(1)  (A) and (B)

(2)  (A) and (C)

(3)  (B) and (C)

(4)  (C) only

31  A surface is called grey surface, if :

(1)  Emissivity and Absorptivity are independent of direction

(2)  Emissivity and Absorptivity are independent of wavelength

(3)  Emissivity and Absorptivity are dependent of wavelength

(4)  Emissivity and Absorptivity are dependent of direction

32  What type of energy is derived from Ocean ground water ?

(1)  Solar energy

(2)  Geo-thermal energy

(3)  Nuclear energy

(4)  OTEC

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**33** In a Francis turbine, the discharge leaves the runner radially at the exit. For this turbine :

    (1) The blade tip is radial at the outlet

    (2) The blade tip is radial at the inlet

    (3) The guide vane angle is 90°

    (4) The absolute velocity is radial at the outlet

**34** Which one of the following statements does not characterise the thermal boundary layer ?

    (1) Thermal boundary layer develops when a fluid at a specified temperature flows over a surface that is at different temperatures

    (2) Temperature variation in the direction normal to the surface is significant

    (3) The thickness of the thermal boundary layer increases in the flow direction

    (4) The relative thickness of the velocity and the thermal boundary layers are always equal to 1

**35** Up to the critical radius of insulation :

    (1) Added insulation increases heat loss

    (2) Added insulation decreases heat loss

    (3) Convection heat loss is less than conduction heat loss

    (4) Heat flux decreases

**36** If absolute temperature of a black body is 'T' then the radiation energy emitted by a black body per unit time and per unit surface area is directly proportional to :

    (1) $T$                (2) $T^2$

    (3) $T^3$            (4) $T^4$

37 Coal fired power plant boilers manufactured in India generally use :

    (1) Pulverized fuel combustion

    (2) Fluidized bed combustion

    (3) Circulating fluidized bed combustion

    (4) Moving stoker fired system

38 Heat transfer by radiation mainly depends upon :

    (1) Its temperature

    (2) Nature of the body

    (3) Kind and extent of its surface

    (4) All the above.

39 In two stage gas turbine plant, with inter-cooling and reheating :

    (1) Both work ratio and thermal efficiency improve

    (2) Work ratio improves but thermal efficiency decreases

    (3) Thermal efficiency improves but work ratio decreases

    (4) Both work ratio and thermal efficiency decrease

40 Temperature of steam at around 540°C can be measured by :

    (1) Thermometer     (2) Radiation pyrometer

    (3) Thermocouple     (4) Thermistor

41 Which one of the following does not cause thermal pollution ?

    (1) Nuclear power plant     (2) Hydro power plant

    (3) Coal-fired power plant     (4) Solar-thermal power plant

42 Soderberg's line refers to :

    (1) Fracture failure of material     (2) Yield point failure

    (3) Elastic limit     (4) Fatigue Failure

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    (3) 1

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43 The ratio of bulk modulus to Young's modulus for a Poisson's modulus of 0.25 will be :

    (1) 1/3

    (2) 2/3

    (3) 1

    (4) 3/2

44 Bending moment at any point is equal to the algebraic sum of :

    (1) Moments of all vertical forces

    (2) Moments of all horizontal forces

    (3) Moment of forces on either side of the point

    (4) All the above

45 Two plates, subjected to a direct load, are connected by means of the following types of riveted joints :

    (A) Lap joint

    (B) Butt joint with single cover plate

    (C) Butt joint with double equal cover plates

    (D) Butt joint with double unequal cover plates

Select the joint/joints in which all the rivets fail in double shear using the codes below :

**Codes :**

    (1) (A) only

    (2) (B), (C) and (D)

    (3) (C) and (D)

    (4) (C) only

46 A shaft revolving at 'w' radians/s transmits torque 'T' N-m. The power developed is :

    (1) $T.w$ Watts

    (2) $2\pi T.w$ Watts

    (3) $2T.w$ Watts

    (4) $2\pi T/w$ Watts

47  When a load on the free end of a cantilever beam is increased, failure will occur :

(1)  At the free end

(2)  At the fixed end

(3)  In the middle of the beam

(4)  At a distance $2l/3$ from free end

48  A semi-spherical laminated leaf spring consisting of number of full length leaves say '$n_f$' and number of graduated leaves say '$n_g$' is subjected to a central load 'P'. The ratio of stress in full length leaves to the stress in graduated leaves will be :

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

(3)  3/2                (4)  $n_g/n_f$

49  When a shaft of diameter '$D$' is subjected to a twisting moment ($T$) and a bending moment ($M$) then the equivalent twisting moment ($T_e$) is given by :

(1)  $\left(M^2 + T^2\right)^{\frac{1}{2}}$                (2)  $\left(M^2 - T^2\right)^{\frac{1}{2}}$

(3)  $\frac{1}{2}\left\{M + \left(M^2 + T^2\right)^{\frac{1}{2}}\right\}$                (4)  $\frac{1}{2}\left\{M - \left(M^2 + T^2\right)^{\frac{1}{2}}\right\}$

50  A steam boiler of diameter '$D$' generates steam at the pressure '$p$'. The allowable tensile stress of the boiler plate material is '$\sigma_t$'. Assuming the boiler as thin pressure vessel, the required thickness of the boiler plate is given as :

(1)  $\frac{pD}{\sigma t}$                (2)  $\frac{pD}{2\sigma t}$

(3)  $\frac{pD}{3\sigma t}$                (4)  $\frac{pD}{4\sigma t}$

51  Which key transmits power through frictional resistance only ?

(1)  Woodruff key          (2)  Flat key

(3)  Sunk key             (4)  Saddle key

52  A solid steel machine shaft with a safe shearing stress '$\sigma_s$', transmits a torque 'T'. The shaft diameter is equal to :

(1)  $\left(\dfrac{4T}{\pi\sigma s}\right)^{1/3}$          (2)  $\left(\dfrac{8T}{\pi\sigma s}\right)^{1/3}$

(3)  $\left(\dfrac{16T}{\pi\sigma s}\right)^{1/3}$          (4)  $\left(\dfrac{32T}{\pi\sigma s}\right)^{1/3}$

53  The design of shaft made of brittle materials is based on :

(1)  Guest's theory        (2)  Rankine's theory

(3)  St. Venant's theory    (4)  Von-Mises theory

54  The Basic Shaft is one :

(1)  Whose upper deviation in zero

(2)  Whose lower deviation is zero

(3)  Whose upper and lower deviations both are zero

(4)  None of the above

55  A list of couplings is given below :

(A)  Rigid flexible coupling

(B)  Bush type flange coupling

(C)  Split muff coupling

(D)  Universal (Hook's) coupling

Which of these is used for perfectly aligned shafts?

(1)  (A) and (B)          (2)  (A) and (C)

(3)  (B) and (C)          (4)  (B) and (D)

56    Which one of the following heat-treatment operation is carried out to modify the properties of steel hardened by quenching?

    (1)  Normalizing          (2)  Annealing

    (3)  Induction heating    (4)  Tempering

57    The maximum shear stress induced in a shaft subjected to a shear $S_s$ and bending stress $S_b$ will be :

    (1)  $\sqrt{S_s^2 + S_b^2}$          (2)  $S_s + \dfrac{1}{2}\sqrt{S_s^2 + S_b^2}$

    (3)  $\sqrt{4S_s^2 + S_b^2}$       (4)  None of the above

58    A list of some theories of failure is given below :

    (A)  Maximum normal stress theory

    (B)  Maximum shear stress theory

    (C)  Maximum distribution theory

Which of these will be used for designing the machine components made of Cast Iron?

    (1)  (B) only         (2)  (B) and (C)

    (3)  (A) and (C)      (4)  (A) only

59    A column of length $l$ is fixed at both the ends. The equivalent length of the column is :

    (1)  $l/2$           (2)  $l/\sqrt{2}$

    (3)  $l$             (4)  $2l$

60    In order to obtain bolt of uniform strength :

    (1)  Increase the shank diameter.

    (2)  Increase its length

    (3)  Drill an axial hole in threaded portion so that shank area is twice the root area.

    (4)  Drill an axial hole though head upto the threaded portion so that shank area is equal to root area.

61 Which one of the following is not true in case of Scientific Management ?

(1) It develops harmony between workers and management

(2) It develops cooperation rather than individualism

(3) It manages on the basis of guess work and not on assessment of facts

(4) It maximizes output with minimum input

62 Which one of the following statements is not true for normal human behavior ?

(1) Individual variables play a major role and influence the performance of an employee at work.

(2) The behavior of individual and behaviour of individual as a member of a group is markedly different.

(3) Group cannot influence or change the attitude and behaviour of an individual.

(4) The feeling of uniqueness or isolated entity generates group cohesiveness.

63 Queuing theory is used for :

(1) Job shop scheduling      (2) Inventory problems

(3) Traffic congestion studies      (4) All of these

64 Which one of the following is not a characteristic feature of motivation ?

(1) Motivation energizes, directs and sustain human behaviour

(2) Motivation can be either positive or negative

(3) Individuals differ in their motivation

(4) Motivation of each individual remains unaffected from time to time, once a head is satisfied

65  In scientific recruitment process, Application Blank refers to :

(1) Receiving application from prospective candidate for a given post.

(2) Conducting a test to know level of ability, knowledge, interest and aptitude of candidate.

(3) After preliminary successful interview, taking information in applicant's hand writing about more factual information.

(4) After final selection, taking willingness of joining in applicant's own handwriting and informing job's requirements and responsibility, and salary structure.

66  Which of the following statements about the apprenticeship is incorrect ?

(1) Apprentices are required to continue to participate in further education for the duration of their vocational studies

(2) Apprentices combine class room teaching and on-the-job experience

(3) Full apprenticeship last for two years

(4) The system is one of the best routes to achieving vocational qualifications

67  Which one of the following is not an advantage of employee training ?

(1) Increased productivity     (2) Increased supervision of employees

(3) Reduced scrap rate     (4) Less fatigue to workers

68  Placement refers to :

(1) Getting a job after graduation.

(2) Assigning a workplace site just after final selection.

(3) Assigning of specific job based on the performance and aptitude in the training.

(4) Shifting of person from one job to another.

69  Over Capitalization of firm refers to :

(1)  When earnings of the concern on total capital are exceptionally high in relation to returns enjoyed by similar situated concerns in the same field.

(2)  When earnings are not adequate enough to yield return on the amount of stock and shares and bonds issued.

(3)  When loans and borrowings are more as compared to required investment.

(4)  None of the above

70  Which one of the following constitutes a fixed capital ?

(1)  Purchase of raw material and supplies

(2)  Equipment and plant maintenance cost

(3)  Purchase of equipment and selling expenses

(4)  None of the above

71  In inventory control theory, the economic order quantity is :

(1)  Average level of inventory

(2)  Optimum lot size

(3)  Capacity of a warehouse

(4)  Lot size corresponding to break even analysis

72  Which one of the following is not the characteristic feature of a good incentive plan ?

(1)  The incentive plan should be simple and easily understandable

(2)  The incentive plan should be profitable to the management only

(3)  It should reward workers in proportion to their output and thus high up their morale

(4)  The employees should be assured of a certain minimum wage irrespective of output

73 . In Paired Comparison Method for merit rating (performance appraisal), number of comparisons to be done is given by (If N = Number of employees) :

(1)  N(N-1)/2

(2)  N-1

(3)  N

(4)  (2N-1)/N

74 Which one of the following is not a characteristic feature of group behaviour ?

(1)  Group behaviour is influenced by the type of group i.e. formal or informal

(2)  Size of the group i.e. large or small also influence group behaviour

(3)  Group influences and changes the attitude and behaviour of an individual towards work and organization

(4)  Group behaviour is always detrimental for the organization and management

75 A diagram showing the path followed by man and materials while performing a task is known as :

(1)  String diagram

(2)  Flow process chart

(3)  Travel chart

(4)  Flow diagram

76 In Emerson's Efficiency Plan for wages, a worker receives only his daily wage and no bonus till his efficiency is more than :

(1)  60%

(2)  66.67%

(3)  80%

(4)  75%

77 Which one of the following is not a screening technique i.e. to eliminate the unqualified or unsuitable candidate ?

(1)  Screening of applications

(2)  Preliminary interviews

(3)  Physical examination

(4)  Employment tests

78 Which incentive plan guarantees minimum wage plus incentive bonus at fixed percentage of earnings for the time saved in comparison to standard time ?

(1) Halsay Incentive Plan     (2) Merrick Differential Rate Plan

(3) Bedaux Point System     (4) Taylor's differential Rate System

79 The production cost per unit can be reduced by :

(1) Producing more with increased inputs

(2) Producing more with the same inputs

(3) Eliminating idle time

(4) Minimizing resource waste

80 Acid Test Ratio is used to supplement the information given by :

(1) Gross Profit Raito     (2) Net Profit Ratio

(3) Current Ratio     (4) Debt Equity Ratio

81 The project completion time can be altered by changing the activities time which falls on :

(1) The critical path     (2) Non-critical path

(3) Dummy activities     (4) Any path

82 A list of various components of the total cost associated with the item transport is given below :

(A) Direct labour

(B) Direct material

(C) Manufacturing overheads

(D) Administrative and distribution overheads

Which of these forms the variable cost ?

(1) (A) and (B)     (2) (C) and (D)

(3) (B) and (C)     (4) (A) (B) and (D)

83. Gantt chart gives information about

    (1) Scheduling and routing    (2) Sales

    (3) Production schedule    (4) Machine utilization

84. CIM is considered as natural evaluation by :

    (1) Integration of CAM, FMS & SCM

    (2) Integration of CAD & CAM

    (3) Integration of TQM, CAM & SCM

    (4) Integration of CAD & FMS

85. Which one of the following symbols will be used for the event 'Reach for bolt' in a two handed process chart for the 'bolt and nut assembly' ?

    (1) Operation symbol    (2) Inspection symbol

    (3) Transportation symbol    (4) Storage symbol

86. Routing in production planning and control refers to the :

    (1) Balancing of load on machine

    (2) Authorization of work to be performed

    (3) Progress of work performed

    (4) Sequence of operations to be performed

87. FMS system is best suited to :

    (1) Mass production system

    (2) High variety production system.

    (3) Job-shop production system

    (4) Mid variety and mid volume production system

88 A list of methods for recording the existing and proposed ways of doing work is given below :

(A) Flow diagram

(B) Man and material flow process chart

(C) Two handed process chart

(D) SIMO (Simultaneous Motion) chart

Which of these is used for recording microscopic motion ?

(1) (A) only

(2) (B) and (C)

(3) (C) and (D)

(4) (D) only

89 Time study is carried out to determine the time required to complete job by :

(1) A slow worker

(2) A fast worker

(3) An average worker

(4) An apprentice

90 Lean Manufacturing focuses on :

(1) Reduction of inventory

(2) Elimination of non-value added activities (waste)

(3) Grouping of machine for product family

(4) Use of CNC machines for production

91 In an inventory control system, if the quality to be ordered is increased, it will result in :

(1) Increase of ordering cost as well as holding cost

(2) Decrease of ordering cost as well as holding cost

(3) Decrease of ordering cost and increase of holding cost

(4) Increase of ordering cost and decrease of holding cost

92  What is RPO ?

(1)  Recruitment Process Output

(2)  Recruitment Procedure Outsourcing

(3)  Recruitment Process Outsourcing

(4)  Retirement Process Outsourcing

93  In Two Bin System :

(1)  Jobs move in batches of fixed quantity between the machines.

(2)  Products are delivered in batches of fixed quantity.

(3)  Inspection for quality control is done in fixed quantity.

(4)  Inventory is ordered in fixed quantity.

94  What is meant by a 'Golden hello' ?

(1)  Cash lump sum promised to employees who stay on in the organization

(2)  Cash lump sum promised to people who refers a friend

(3)  Cash lump sum offered to people leaving the organization

(4)  Cash lump sum offered to new recruits

95  PERT stands for :

(1)  Programme Estimation and Review Technique

(2)  Programme Evaluation and Review Technique

(3)  Project Estimation and Review Technique

(4)  Project Evaluation and Review Technique

96  In ABC inventory control analysis :

(1)  Careful control on high value and low volume items.

(2)  Careful control of high demand items.

(3)  Careful control on quality assurance of inventory.

(4)  Careful control on low value and high volume items.

97  In production, planning and control document which authorize the start operation on the shop floor is :

    (1) Dispatch order          (2) Route

    (3) Loading chart          (4) Schedule

98  Recording techniques in Method Study are :

    (1) Flow Process Chart, SIMO chart, Cycle Chart, Travel Chart.

    (2) Flow Process Chart, SIMO chart, Activity relationship chart, Work Sampling Chart.

    (3) SIMO chart, Travel Chart, MTM chart, Precedence diagram.

    (4) SIMO chart, Activity relationship Chart, MTM chart, Precedence diagram

99  CNC system stands for :

    (1) Complex Numerical Control

    (2) Computer Numerical Control

    (3) Conventional Numerical Control

    (4) Continuous Numerical Control

100  Work Sampling involves :

    (1) Making of large number of observations at regular constant interval of time over a specified time period.

    (2) Making a large number of observations for observed time to calculate standard time.

    (3) Making a large number of observations at random time interval over a specified time period.

    (4) Making a large number of observations at random time interval for method time measurement.

**SPACE FOR ROUGH WORK**