ESE 2019

Paper-1

Mechanical Engineering

▶ **Questions & Answer Key**

1. Which one of the following is **not** a component of 'Capital Receipts'?
   A. Market borrowings including special bonds
   B. External loans raised by the Central Government from abroad
   C. Receipts from taxes on property and capital transactions
   D. Provident Funds (State Provident Funds and Public Provident Fund)

Ans. C

2. Which one of the following statements is correct with respect to the 'societal development'?
   A. Behavior grows into habits, habits into tradition and tradition becomes custom
   B. Customs grow into mores and mores grow into custom
   C. Behaviors grow into customs and customs grow into traditions
   D. Folkways grow into tradition and traditions grow into customs

Ans. A

3. Which one of the following statements is correct with respect to 'the convergence theory' on social change?
   A. The societal adaptive culture is changing more slowly
   B. As societies becomes modernized, they begin to resemble one another more closely
   C. The developed countries show more growth in social changes than the less developed countries
   D. Strong opposition by old people retards the social change

Ans. B

4. With respect to the conduct and performance of a company, 'perfect competition' refers to
   A. Large number of small firms producing differentiated products
   B. Complete freedom in economic life and absence of rivalry among firms
   C. Many companies selling similar products with free entry
   D. Sole produce selling a distinct product

Ans. C

5. The cheapest method of marketing of securities with the only cost incurred being on sending 'letters of rights' to existing holder is
   A. Public issue through prospectus method
   B. Offer for sale method
   C. Rights issue
   D. Subscription by inside coterie method

Ans. C

6. 'Fiscal policy' means
   A. Balancing the revenue collection and expenditure
   B. Establishing equilibrium between demand and supply of goods and services
   C. Use of taxation, public borrowing, and public expenditure by Government of purposes of 'stabilization' or 'development'
   D. Deficiency as an instrument of growth

Ans. C

7. Which of the following come under the offering of 'MUDRA' Bank
   1. Portfolio Credit Guarantee
   2. Credit for large industries
   3. Mudra Card
   4. Credit Enhancement
   Select the correct answer using the codes given below:
   A. 1, 2 and 3 only   B. 1, 3 and 4 only
   C. 1, 2 and 4 only   D. 2, 3 and 4 only

Ans. B

8. Which of the following is/are the key reasons for encouraging start up Entrepreneurship?

1. Innovations

2. Focusing on service industry

3. Bringing the values of proactivity into the society

Select the correct answer using the codes given below:

A. 1 only   B. 2 only

C. 1 and 3 only   D. 1, 2 and 3

Ans. C

9. Which of the following are the main objectives of Gold Monetization Scheme launched in the country?

1. To monetize gold holdings in the country

2. To increase export of gold from the country

3. To reduce India's import bill

4. To meet the targets of reduction in fiscal deficit Select the correct answer using the codes given below:

A. 1 and 4 only   B. 2 and 4 only

C. 2 and 3 only   D. 1 and 3 only

Ans. D

10. A person travelled by car 70 km towards north to A then covered 30 km turning left to B. Again, he turned towards left and travelled 110 km to C. Then he cycled at the rate of 10 km/hour towards the starting point. The time taken by him to reach the starting point from C will be

A. 3 hours   B. 5 hours

C. 7 hours   D. 21 hours

Ans. B

11. A student purchases some books for Rs. 1600. If he had bought 8 more books for the same amount, each book would cost Rs. 10 less. The number of books he buys is

A. 30   B. 32

C. 34   D. 36

Ans. B

12. A hemisphere depression is cut-out from one face of the cubical wooden block such that the radius r of the hemisphere is equal to half of the edge of the cube. What will be the surface area of the remaining solid?

A. $2r^2(п + 24)$ B. $r^2(п + 24)$

C. $2r^2(п + 36)$ D. $r^2(п + 36)$

Ans. B

13. A rod of length l is to be divided into two parts, such that if 5 times the smaller portion is added to half of the larger portion, it will always be less than l. This can be achieved by taking length of the larger portion more than

A. $\dfrac{9}{10}l$ B. $\dfrac{7}{8}l$

C. $\dfrac{6}{7}l$ D. $\dfrac{5}{6}l$

Ans. A

14. Which of the following conditions hold good for a train which crosses the bridge of length l in time t_1 and crosses another bridge of length $l/2$ in time t_2?

1. $t_2 = \dfrac{t_1}{2}$

2. $2t_2 > t_1$

3. $t_2 < \dfrac{t_1}{2}$

4. Speed of train is $\dfrac{l}{10}$ if $t_1 - t_2 = 5$

Select the correct answer using the codes given below:

A. 1 and 4 only   B. 2 and 4 only

C. 1 and 3 only   D. 2 and 3 only

Ans. B

15. A tourist covers half of his journey by train at 60 km/h, half of the remainder by bus at 30 km/h and the rest by cycle at 10 km/h. Average speed of the tourist during the journey is

A. 36 km/h   B. 33 km/h

C. 24 km/h   D. 18 km/h

Ans. C

16. In a lake, the tip of a bud of lotus is seen 10 cm above the surface of water. Forced by the wind, it gradually moved, and just submerged at a distance of 30 cm. The depth of water at the root of the lotus plant will be

A. 40 cm   B. 50 cm

C. 60 cm   D. 70 cm

Ans. A

17. A man sold a chair and a table together for Rs. 7,600, thereby making a profit of 25% on the chair and 10% on the table. By selling them together for Rs. 7,500 he would make a profit of 10% on the chair and 20% on the table. Then the cost of chair and table will be

A. Rs. 3000 and Rs. 4000

B. Rs. 3500 and Rs. 4000

C. Rs. 3000 and Rs. 3500

D. Rs. 3500 and Rs. 3500

Ans. C

18. In two concentric circles, a chord length 80 cm of larger circle becomes a tangent to the smaller circle whose radius is 9 cm. The radius of the large circle will be

A. 13 cm   B. 41 cm

C. 52 cm   D. 75 cm

Ans. B

19. Professionals who breach the 'duty of care' are liable for injurie their negligence causes. This liability is commonly referred to as

A. Professional offense

B. Professional negligence

C. Professional misdeed

D. Professional malpractice

Ans. B

20. Information used in a business, generally unknown to the public, that the company has taken strong measures to keep confidential is called

A. A patent   B. A copyright

C. A trade secret   D. A trademark

Ans. C

21. A committee of 4 is to be formed from among 4 girls and 5 boys. What is the probability that the committee will have number of boys less than number of girls?

A. 2/9   B. 4/9

C. 4/5   D. 1/6

Ans. D

22. The solution of initial value problem; $\frac{\partial u}{\partial x} = 2 \frac{\partial u}{\partial t} + u$, where u(x, 0) = $6e^{-3x}$ is

A. u = $6e^{-3x + t}$ B. u = $6e^{-(2x + 2t)}$

C. u = $6e^{-(3x + 2t)}$ D. u = $6e^{-(3x + 2t)}$

Ans. C

23. Polar form of the Cauchy-Reimann equation is

A. $\frac{\partial u}{\partial r} = r \frac{\partial v}{\partial \theta}$ and $\frac{\partial v}{\partial r} = -r \frac{\partial u}{\partial \theta}$

B. $\frac{\partial u}{\partial r} = \frac{1}{r} \frac{\partial v}{\partial \theta}$ and $\frac{\partial v}{\partial r} = -\frac{1}{r} \frac{\partial u}{\partial \theta}$

C. $\frac{\partial u}{\partial r} = \frac{1}{r} \frac{\partial v}{\partial \theta}$ and $\frac{\partial v}{\partial r} = -r \frac{\partial u}{\partial \theta}$

D. $\frac{\partial u}{\partial r} = r \frac{\partial v}{\partial \theta}$ and $\frac{\partial v}{\partial r} = -\frac{1}{r} \frac{\partial u}{\partial \theta}$

Ans. B

24. If $f(z)$ has a pole of order n at z = a, then residue of function $f(z)$ at a is

A. $\text{Res } f(a) = \dfrac{1}{(n)!}\left\{\dfrac{d^{n-1}}{dZ^{n-1}}\left((z-a)^{n-1}\, f(z)\right)\right\}_{z=a}$

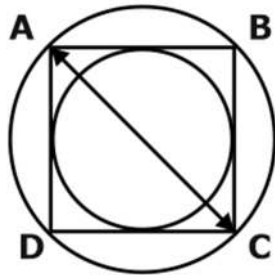B. $\text{Res } f(a) = \dfrac{1}{(n-1)!}\left\{\dfrac{d^{n-1}}{dZ^{n-1}}\left((z-a)^{n-1}\, f(z)\right)\right\}_{z=a}$

C. $\text{Res } f(a) = \dfrac{1}{(n)!}\left\{\dfrac{d^{n-1}}{dZ^{n-1}}\left((z-a)^{n}\, f(z)\right)\right\}_{z=a}$

D. $\text{Res } f(a) = \dfrac{1}{(n-1)!}\left\{\dfrac{d^{n-1}}{dZ^{n-1}}\left((z-a)^{n}\, f(z)\right)\right\}_{z=a}$

Ans. D

25. Consider following diagram: AC is a diameter of the large circle and AB = BC.

The ratio of areas of the large circle to the small circle of a square is

A. 4 : 1　　　　　B. 1 : 4

C. 2 : 1　　　　　D. 1 : 2

Ans. C

26. Which term refers to a single person having authority to oversee all aspects of a product's production scheduling, inventory, dislocation, and sales?

A. Project management

B. Product management

C. Commercial management

D. Venture management

Ans. B

27. The lowest Eigen value of the 2 × 2 matrix $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$ is

A. 1　　　　　B. 2

C. 3　　　　　D. 5

Ans. B

28. Consider the following statements:

1. Mobile cranes are sophisticated machines which are designed for lifting efficiently

2. Mobile cranes are a versatile and reliable means of lifting on site

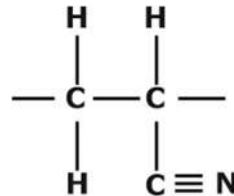which of the above statements is/are correct?

A. 1 only　　　　　B. 2 only

C. Both 1 and 2　　　　　D. Neither 1 nor 2

Ans. B

30. Consider the following Repeat Unit Structure:

What is the above polymer?

A. Poly(amide – imide)

B. Polyacrylonitrile

C. Polybutadiene

D. Polyethylene

Ans. B

31. Which of the following measures is/are correct for using Mobile Equipment Working Platform (MEWP)?

1. Tyres are properly inflated, and air filled

2. SWL to be marked in platforms as identification for carrying loads

A. 1 only　　　　　B. 2 only

C. Both 1 and 2　　　　　D. Neither 1 nor 2

Ans. C

32. Ozone layer present in the atmosphere protects life on earth by not permitting harmful radiations present in the sunlight to penetrate through it. Ozone layer is formed by the reaction of

A. Chlorofluorocarbons (CFCs) on oxygen (O_2)

B. Chlorine (Cl) on oxygen (O_2)

C. Solar Ultraviolet rays on oxygen (O_2)

D. Chlorine nitrate ($ClNO_3$) on oxygen (O_2)

Ans. C

33. The insert command is used in 'Auto CAD' to insert

A. Objects in the current file

B. Objects in any file

C. Blocks in any drawing file

D. Blocks and w-blocks in the current drawing

Ans. D

34. A cone resting on its base in horizontal plane (HP) is cut by a plane inclined to the axis and parallel to one of its generators, the sectional view will be

A. Ellipse   B. Parabola

C. Hyperbola   D. Circle

Ans. B

35. Consider the following components:

1. Knowledge of psychology

2. Knowledge of the theory of variation

3. Knowledge of process

4. Knowledge of the system and the theory of optimization

Which of the above components comprise the basis of Deming's Systems of Profound Knowledge?

A. 1, 2 and 3 only   B. 1, 3 and 4 only

C. 1, 2 and 4 only   D. 2, 3 and 4 only

Ans. C

36. Consider the following statements:

1. Greenfield Privatization or Incremental Privatization denotes encouragement private sector in areas hitherto reserved for Public Enterprises.

2. Cold Privatization refers to measures taken distance Public Enterprises from the Government.

Which of the above statements is/are correct?

A. 1 only   B. 2 only

C. Both 1 and 2   D. Neither 1 nor 2

Ans. C

37. Which of the following steps are involved in the product improvement cycle?

1. Sell it in the market

2. Determine quality of performance

3. Design the product based on customer needs

4. Test it in the laboratory

Select the correct answer using the codes given below:

A. 1 and 3 only   B. 2 and 4 only

C. 1,3 and 4 only   D. 1,2,3 and 4

Ans. D

38. Who is responsible for establishing, documenting and maintaining procedures for postproduction handling functions such as storage, packaging and delivery?

A. Production Manager

B. Marketing Manager

C. Vendor

D. Quality Supervisor

Ans. C

39. A unit produces packing boxes. Out of hourly production of 4,000 boxes, 20 were found to be non-conforming. If the inspector randomly chooses a box from an hour's production, the probability of it being non-conforming is

A. 0.02   B. 0.10

C. 0.005   D. 0.05

Ans. C

40. Which of the following are relevant factors regarding quality in service sector?

1. Timeliness of service

2. Customer participation

3. Company personnel motivation

4. Company culture

Select the correct answer using the codes given below:

A. 1,3 and 4 only   B. 1,2 and 3 only

C. 1,2,3 and 4   D. 2,3 and 4 only

Ans. C

41. Which one of the following tests can be resorted to in order to check the structural soundness conformance to the specified standards, when all other tests fail?

A. Destructive   B. Non-destructive

C. Full scale load   D. Masonry

Ans. B

42. Which of the following are the sources of variation in quality control process in construction?

1. Material

2. Operator

3. Inspection activity

Select the correct answer using the codes given below:

A. 1,2 and 3   B. 1 and 2 only

C. 1 and 3 only   D. 2 and 3 only

Ans. A

43. What is the break-even sale for the following products?

	Products		
	A	B	C
Sales (units)	5,000	6,000	4,000
Unit selling price (Rs.)	10	15	18
Unit variable price (Rs.)	6	4	13
Fixed cost of the products is (Rs. 20,000)			

A. Rs. 90,000   B. Rs. 80,000

C. Rs. 60,000   D. Rs. 40,000

Ans. D

44. Which of the following approaches are correct regarding total quality?

1. Opportunity to improve

2. Adoption requires little change

3. React to competitive threats

Select the correct answer using the codes given below:

A. 1 and 2 only   B. 1 and 3 only

C. 2 and 3 only   D. 1,2 and 3

Ans. D

45. Which of the following are constraints to the use of TQM in construction process?

1. A transient labour force.

2. The construction process is relatively short in duration.

3. Hierarchical and vertical organization structure.

4. The construction process has not focused on the detailed needs of the customer.

Select the correct answer using the codes given below:

A. 1 and 4 only   B. 2 and 3 only

C. 1 and 2 only   D. 3 and 4 only

Ans. C

46. BOD of a wastewater sample is estimated to be 180 mg/*l*. Assuming 4 mg/*l* BOD can be consumed in the BOD bottle, the volume of undiluted sample to be added to a 300 m/ bottle is nearly

A. 6.7 ml   B. 5.6 ml

C. 4.4 ml   D. 3.3 ml

Ans. A

47. Venturi scrubber, a device used to remove particulate matter from the atmosphere, works on the principle of

A. Settling by gravitational force

B. Removal by centrifugal force

C. Removal by electrically charged particles

D. Removal by atomized water vapour

Ans. D

48. Environmental Impact Assessment (EIA) is aimed to help

A. Estimate future needs of the society

B. Smooth implementation of a project

C. Cope with rapid increase in population

D. Resource conservation

Ans. D

49. Which one of the following is a terrestrial type of ecosystem?

A. Limnetic   B. Estuary

C. Prairie   D. Reefs

Ans. D

50. What are the limitations of solar energy?

1. Collecting solar energy over large areas and converting it to other forms that can be conveniently transported, stored and used in existing equipment is not economical.

2. Low density of solar energy as compared to coal, oil and gas.

3. Its major applications are photothermal conversion, solar water heating, green housing technology and photo voltaic

conversion. Select the correct answer using the codes given below:

A. 1,2 and 3   B. 1 and 2 only

C. 1 and 3 only   D. 2 and 3 only

Ans. B

51. Acid rain results when gaseous emissions of Sulfur oxides (SO_X) and nitrogen oxides (NO_X) interact with water vapour and

(a) Moonlight, and are chemically converted to strong acidic compounds such as sulfuric acid (H_2SO_4) and nitric acid (HNO_3)

(b) Sunlight, and are chemically converted to strong acidic compounds such as sulfuric acid (H_2SO_4) and nitric acid (HNO_3)

(c) Moonlight, and are chemically converted to weak acidic compounds such as sulfuric acid (H_2SO_4) and nitric acid (HNO_3)

(d) Sunlight, and are chemically converted to weak acidic compounds such as sulfuric acid (H_2SO_4) and nitric acid (HNO_3)

Ans. B

52. The *'Minamata Tragedy'* was caused by the eating of fish growing in the Minamata Bay contaminated with

A. Peroxy alyinitrate   B. Methyl isocyanate

C. Potassium cyanide   D. Methyimercury

Ans. D

53. What are the advantages of Biomass as a source of energy?

1. Its storage and transportation is possible

2. It is ecologically safe and is inoffensive

3. Can be developed with present man and material abilities

4. Low capital input required

Select the correct answer using the codes given below:

A. 1, 2, 3 and 4   B. 1, 2 and 3 only

C. 1, 3 and 4 only   D. 2, 3 and 4 only

Ans. A

54. Consider the following data for a domestic biogas plant:

Number of cows = 5

Retention time = 20 days

Temperature = 30°C

Dry matter consumed = 3 kg/day

Biogas yield = 0.24 m³/kg

Efficiency of burner = 60%

Methane proportion = 0.8

Heat of combustion of Methane = 28 MJ/m³

Density of dry material in fluid = 50 kg/m³

The power available from the digester will be nearly

A. 16.2 MJ/day   B. 24.3 MJ/day

C. 32.3 MJ/day   D. 48.6 MJ/day

Ans. C

55. The best tool to ensure that there is neither piling up of stocks nor shortage of materials in a project to run it economically is

A. Economic order quantity

B. ABC Analysis

C. Inventory Control and Management

D. Gantt Chart Method

Ans. C

56. A machine is expected to generate cash saving (after-tax) of Rs. 50,000 per annum over a period of 5 years. Salvage value of machine is 40% of the original cost. If accounting rate of return is 20%, cost of two such machines will be

A. Rs. 78,125   B. Rs. 1,56,250

C. Rs. 3,12,500   D. Rs. 6,25,000

Ans. C

57. It is expected to receive Rs. 5,000 annually for 3 years with each receipt occurring at the end of the year. With a discount rate of 10%, the present value of the annuity will be nearly

A. Rs. 12,435   B. Rs. 9,945

C. Rs. 4,975   D. Rs. 2,487

Ans. A

58. In a project life cycle, the maximum percentage of effort is done in

A. Concept phase

B. Definition phase

C. Planning and organizing phase

D. Implementation phase

Ans. D

59. In progress of a project, the percentage of error will be less in

A. Definitive cost estimate

B. Detailed estimate

C. Preliminary estimate

D. Study estimate

Ans. A

60. In principle, the network should not be made complex. No control system, for that matter, can operate unless it is kept simple. This principle is called

A. CPM   B. PERT

C. KISS   D. GERT

Ans. C

61. Which one of the following is a viable alternative to term-loans and are instruments for raising debt finance by large publicly traded firms?

A. Shares   B. Debentures

C. Asset loans   D Gold loans

Ans. B

62. Which one of the following makes the design, assembly, and operation of complex systems feasible and practical?

A. System Architecture B. Modularization

C. Standardization D. Composition

Ans. B

63. Which one of the following schedules shows the specific activities necessary to complete an activity or work package?

A. Project schedule B. Master schedule

C. Task schedule D. Internal schedule

Ans. C

64. In a stable ceramic crystal structure, a cation is surrounded by three anions in the form of planar equilateral triangle. The ratio of the cation-anion radius for the crystal is nearly

A. 0.16 B. 0.24

C. 0.32 D. 0.41

Ans. A

65. During tensile testing of a material, if cross-sectional area of the specimen is doubled, the load required to produce the same elongation shall be

A. Double B. Half

C. Same D. Four times

Ans. A

66. When two or more chemically different monomers are polymerized to form a cross link polymer along with some by product such as water, the process is known as

A. Crystallographic polymerization

B. Addition polymerization

C. Copolymerization

D. Condensation polymerization

Ans. D

67. The number of atoms per unit length whose centres lie on the direction vector for a specific crystallographic direction is called

A. Linear density B. Theoretical density

C. Atomic density D. Avogadro number

Ans. A

68. Which of the following features of atoms determine the degree to which the solute atoms dissolve in the solvent atoms?

1. Atomic size factor

2. Crystal structure

3. Electronegativity

A. 1 and 2 only B. 1 and 3 only

C. 2 and 3 only D. 1,2 and 3

Ans. D

69. A state for ionic compounds wherein there is the exact ratio of cations to anions as predicted by the chemical formula is

A. Electroneutrality B. Stoichiometry

C. Equiliometry D. Frankel defect

Ans. B

71. The capacity of a material to absorb energy when it is deformed elastically and then, upon unloading, to have this energy recovered is called

A. Ductility B. Tensile strength

C. Elasticity D. Resilience

Ans. D

71. In which one of the following phase transformations, there are no compositional alterations?

A. Incongruent transformations

B. Congruent transformations

C. Non-equilibrium transformations

D. Equilibrium transformations

Ans. B

72. In a simple cubic structure, atomic power factor is nearly

A 0.9   B. 0.7

C. 0.5   D. 0.3

Ans. C

73. Which of the following are the advantages of coding audio visual objects?

1. It allows interaction with the content

2. It improves reusability and coding the content

3. It allows content-based scalability

A. 1 and 2 only   B. 1 and 3 only

C. 2 and 3 only   D. 1, 2 and 3

Ans. D

74. The transmission of real-time streams across networks uses Bandwidth Allocation Mechanism (BAM), which is based on

A. Stream peak rate

B. Bucket rate

C. Token bucket depth

D. Packet size

Ans. A

75. The quality of service provided in a computer network is

A. Presentation layer issue

B. Session layer issue

C. Network layer issue

D. Data link layer issue

Ans. C

76. The Pre-echo PE distortions in audio signal represents the

A. Theoretical limit on compressibility of particular signals

B. Imaginary components of a signal

C. Critical band analysis of a signal

D. Histogram of the signals

Ans. A

77. In a computer network, a point-to-point transmission, with one sender and one receiver is called

A. Unicasting   B. Multicasting

C. Broadcasting   D. Internetworking

Ans. A

78. The Protocol (http), the DNS name of the host, and the file name is identified through

A. Uniform Resource Locator

B. Web Browser

C. Web Server

D. IP address

Ans. A

79. The traditional way to handle forms and other interactive Web pages is a system called

A. Graphical User Interface

B. Common Gateway Interface

C. Text Based User Interface

D. Command Line Interface

Ans. B

80. Pretty Good Privacy (PGP) which encrypts the data by using a block cipher is used in

A. FTP security   B. e-mail security

C. Browser security   D. Bluetooth security

Ans. B

81. The core elements of high-level programming languages are

A. Keywords, Expressions and Punctuation

B. Functions, Keywords and Operators

C. Keywords, Operators and Punctuation

D. Functions, Expressions and Operators

Ans. C

82. The philosophical study of beliefs and knowledge is better known as

A. Ontology   B. Epistemology

C. Entomology   D. Etymology

Ans. B

83. One branch of ethical philosophy-claims that it is possible to know right from wrong or good from bad in a very clear and objective manner, is called

A. Non-Cognitivism   B. Ethical Pluralism

C. Cognitivism   D. Utilitarianism

Ans. C

84. Consider the following statements regarding 'Engineering Ethics':

1. It is the activity of understanding moral values

2. It resolves the moral issues and justifies moral judgments

3. It would refer to the set of specifically moral problems and issues related to Engineering Which of the above statements are correct?

A. 1,2 and 3   B. 1 and 2 only

C. 1 and 3 only   D. 2 and 3 only

Ans. A

85. A situation where very high prices are charged from customers for a limited period of time is known as

A. Gouging   B. Zipping

C. Bamboozling   D. Hoodwinking

Ans. A

86. Consider the following steps for an individual regarding preparation for disclosure of unethical behaviour:

1. Study and document the facts and formulate a plan for an appeal.

2. Take up the matter with higher management.

3. Discuss the matter with immediate supervisor.

4. If the internal appeal does not resolve the conflict, then he should notify the company that he intends to continue with an external review of the problem. What is the correct sequence of order of the above steps?

A. 2,3,1 and 4   B. 1,3,2 and 4

C. 3,2,4 and 1   D. 1,2,3 and 4

Ans. B

87. Which of the following are the attributes of a profession?

1. The work requires sophisticated skills, use of judgment and exercise of discretion

2. Membership in the profession does not require extensive formal education as well as practical training

3. There are set standards for admission to the profession and conduct for members

4. Significant public good results from practice of the profession Select the correct answer using the codes given below:

A. 1,2 and 3 only   B. 1,2 and 4 only

C. 1,3 and 4 only   D. 2,3 and 4 only

Ans. C

88. What are the core qualities of a professional practitioner?

1. Integrity both with themselves and with others

2. Independence-to be free of secondary interests with other parties

3. Competence

4. Discretion-care with communications

Select the correct answer using the codes given below:

A. 1,2,3 and 4   B. 1,2 and 3 only

C. 1 and 3 only   D. 3 and 4 only

Ans. A

89. When should whistle blowing be attempted?

1. There must be a clear and great harm that can be avoided

2. The whistleblower must be in a clear position to report on the problem

3. The whistleblower must have a reasonable chance of success in stopping the harmful activity

4. The whistleblower feels that all other lines of action within the context of the organization have been explored and shut off Select the correct answer using the codes given below:

A. 1,2,3 and 4   B. 1,2 and 4 only

C. 1,3 and 4 only   D. 2 and 3 only

Ans. B

90. Which of the following are the salient features of the Patent Act 1970?

1. It codifies inventions which are not patentable

2. It provides for endorsement of patent with the words 'license of right'

3. It provides for revocation of patents in public interest

4. It has provision for validity period also for the patents Select the correct answer using the codes given below:

A. 1,2,3 and 4   B. 1,2 and 4 only

C. 1,3 and 4 only   D. 2 and 3 only

Ans. C

91. **Statement (I)**: All projects have constraints or limitations that inhibit their ability to reach goals and objectives.

Statement (II): Time and money are universal constraints in projects.

Ans. B

92. **Statement (I):** Training should be conducted among the line and low management for ensuring the importance of environmental protection plan.

Statement (II): Environmental science is a developing subject and the people implementing environment strategies should remain up to date with the environmental control processes.

Ans. A

93. **Statement (I) :** Metals having same crystal structure will have greater solubility.

Statement (II) : Differences in crystal structure limits the solid solubility.

Ans. A

94. **Statement (I):** The tie line is constructed across the two-phase region at the temperature of the alloy.

Statement (II): The overall alloy composition is located on the line.

Ans. B

95. **Statement (I):** Cross linked polymers may be synthesized in which side-branch chains are connected to the main ones.

Statement (II): Linear polymers are those in which the repeat units are joined together end to end in single chains.

Ans. B

96. **Statement (I):** Abrasive ceramics are used to wear, grind, or cut away other material, which necessarily is softer.

Statement (II): The prime requisite for abrasive ceramic group of materials is hardness or wear resistance and a high degree of toughness is essential to ensure that the abrasive particles do not easily fracture.

Ans. A

97. Statement (I): The prevention costs increase with the introduction of a quality system and may be a significant proportion of the total quality costs.

Statement (II): Costs associated with education and training are not included in prevention costs.

Ans. C

98. Statement (I): An emulator is not a mixture of hardware and software and it cannot be used to test and debug the hardware and software of an external system.

Statement (II): Part of the hardware of an emulator is a multiwire cable which connects the host system to the system being developed.

Ans. D

99. Statement (I): Agency-loyalty is acting to fulfil one's contractual duties to an employer.

Statement (II): Agency-loyalty is entirely a matter of actions, whatever its motives.

Ans. B

100. Statement (I): An EIA is a study of the probable changes in socio-economic and biophysical characteristics of the environment that may result from a proposed action.

Statement (II): The purposes of an EIA is to help design projects, which do not disturb the quality of the environment by examining alternatives.

Ans. B

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