

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

Test Booklet Series

T.B.C. : VBY-G-DST

Serial No.  
192

# TEST BOOKLET

## GENERAL STUDIES AND ENGINEERING APTITUDE

D

Maximum Marks : 200

Allowed : Two Hours

### INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST

IT IS THE CANDIDATE'S RESPONSIBILITY TO ENCODE AND NUMBER AND TEST BOOKLET SERIES CODE A, B, C OR D CAREFULLY ON THE ANSWER SHEET. ANY OMISSION OR DISCREPANCY AT THE APPROPRIATE PLACE ON THE ANSWER SHEET WILL MAKE THE CANDIDATE LIABLE FOR REJECTION.

... (answers). You  
... Answer sheet. In case, you feel that there  
... response which you consider the best. In any case,  
for each item.  
... ONLY on the separate Answer Sheet provided. See directions in

... Mark in the Answer Sheet the response to various items in the Test Booklet;  
... some particulars in the Answer Sheet as per instructions sent to you with your  
... te.  
... pleted filling in all your responses on the Answer Sheet and the examination has  
... ould hand over to the Invigilator **only the Answer Sheet**. You are permitted to take  
... you the Test Booklet.

10. ... sheets for rough work are appended in the Test Booklet at the end.

#### Penalty for wrong Answers :

THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE.

- (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third (0.33)** of the marks assigned to that question will be deducted as penalty.
- (ii) If a candidate gives more than one answer, it will be treated as **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
- (iii) If a question is left blank i.e. no answer is given by the candidate, there will be no penalty for that question.

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1. 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

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

- (a) Ontology
- (b) Epistemology
- (c) Entomology
- (d) Etymology

3. 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

4. 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

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

- (a) Gouging
- (b) Zipping
- (c) Bamboozing
- (d) Hoodwinking

6. 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

7. 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

8. 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

9. 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

10. 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

**Directions :**

Each of the next **Ten (10)** items consists of two statements, one labelled as the 'Statement (I)' and the other as 'Statement (II)'. You are to examine these two statements carefully and select the answers to these items using the codes given below :

**Codes :**

- (a) Both Statement (I) and Statement (II) are individually true and Statement (II) is the correct explanation of Statement (I)
- (b) Both Statement (I) and Statement (II) are individually true but Statement (II) is *not* the correct explanation of Statement (I)
- (c) Statement (I) is true but Statement (II) is false
- (d) Statement (I) is false but Statement (II) is true

11. 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.

12. 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.

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

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

14. 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 tie line.

15. 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.

16. 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.

17. 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.

18. 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.

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

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

20. Statement (I) : An EIA is a study of the probable changes in socio-economic and bio-physical 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.

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)  $\frac{2}{9}$

(b)  $\frac{4}{9}$

(c)  $\frac{4}{5}$

(d)  $\frac{1}{6}$

22. The solution of initial value problem;

$$\frac{\partial u}{\partial x} = 2 \frac{\partial u}{\partial t} + u, \text{ where } u(x, 0) = 6e^{-3x} \text{ is}$$

(a)  $u = 6e^{-3x+t}$

(b)  $u = 6e^{-(2x+2t)}$

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

(d)  $u = 6e^{-(3x-2t)}$

23. Polar form of the Cauchy-Riemann equations 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  $\frac{\partial v}{\partial r} = -\frac{1}{r} \frac{\partial u}{\partial \theta}$

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

(a)  $\text{Res } f(a) =$

$$\frac{1}{(n)!} \left\{ \frac{d^{n-1}}{dz^{n-1}} \left( (z-a)^{n-1} f(z) \right) \right\}_{z=a}$$

(b)  $\text{Res } f(a) =$

$$\frac{1}{(n-1)!} \left\{ \frac{d^{n-1}}{dz^{n-1}} \left( (z-a)^{n-1} f(z) \right) \right\}_{z=a}$$

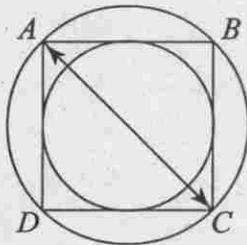
(c)  $\text{Res } f(a) =$

$$\frac{1}{(n)!} \left\{ \frac{d^{n-1}}{dz^{n-1}} \left( (z-a)^n f(z) \right) \right\}_{z=a}$$

(d)  $\text{Res } f(a) =$

$$\frac{1}{(n-1)!} \left\{ \frac{d^{n-1}}{dz^{n-1}} \left( (z-a)^n f(z) \right) \right\}_{z=a}$$

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

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

27. The lowest Eigen value of the  $2 \times 2$

matrix  $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$  is

(a) 1

(b) 2

(c) 3

(d) 5

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

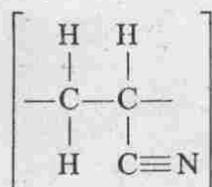
29. Which of the following statements are correct for portable step-ladders ?

1. Used on working platforms to gain height above the protected edge
2. Used in the fully opened position
3. Should be of a length that ensures a person's feet are not positioned any higher than the second top rung

Select the correct answer using the codes given below :

- (a) 2 and 3 only
- (b) 1 and 3 only
- (c) 1 and 2 only
- (d) 1, 2 and 3

30. Consider the following Repeat Unit Structure :



What is the above polymer ?

- (a) Poly(amide – imide)
- (b) Polyacrylonitrile
- (c) Polybutadiene
- (d) Polyethylene

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

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 ( $\text{O}_2$ )
- (b) Chlorine (Cl) on oxygen ( $\text{O}_2$ )
- (c) Solar Ultraviolet rays on oxygen ( $\text{O}_2$ )
- (d) Chlorine nitrate ( $\text{ClNO}_3$ ) on oxygen ( $\text{O}_2$ )

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 wblocks in the current drawing

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

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

36. Consider the following statements :

1. Greenfield Privatization or Incremental Privatization denotes encouragement to private sector in areas hitherto reserved for Public Enterprises
2. Cold Privatization refers to measures taken to 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

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

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

- (a) Production Manager
- (b) Marketing Manager
- (c) Vendor
- (d) Quality Supervisor

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

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

41. 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

42. 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

43. 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

44. In a stable ceramic crystal structure, a cation is surrounded by three anions in the form of a 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

45. 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

46. When two or more chemically different monomers are polymerized to form a cross link polymer along with some byproduct such as water, the process is known as
- Crystallographic polymerization
  - Addition polymerization
  - Copolymerization
  - Condensation polymerization
47. The number of atoms per unit length whose centres lie on the direction vector for a specific crystallographic direction is called
- Linear density
  - Theoretical density
  - Atomic density
  - Avogadro number
48. Which of the following features of atoms determine the degree to which the solute atoms dissolve in the solvent atoms ?
- Atomic size factor
  - Crystal structure
  - Electronegativity
- 1 and 2 only
  - 1 and 3 only
  - 2 and 3 only
  - 1, 2 and 3
49. A state for ionic compounds wherein there is the exact ratio of cations to anions as predicted by the chemical formula is
- Electroneutrality
  - Stoichiometry
  - Equilometry
  - Frankel defect
50. The capacity of a material to absorb energy when it is deformed elastically and then, upon unloading, to have this energy recovered is called
- Ductility
  - Tensile strength
  - Elasticity
  - Resilience
51. In which one of the following phase transformations, there are no compositional alterations ?
- Incongruent transformations
  - Congruent transformations
  - Non-equilibrium transformations
  - Equilibrium transformations
52. In a simple cubic structure, atomic packing factor is nearly
- 0.9
  - 0.7
  - 0.5
  - 0.3

53. Which of the following are the advantages of coding audiovisual 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
54. 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
55. 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
56. 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
57. 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
58. 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
59. 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

60. 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

61. 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

62. 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

63. 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 product is (Rs. 20,000)			

- (a) Rs. 90,000
- (b) Rs. 80,000
- (c) Rs. 60,000
- (d) Rs. 40,000

64. 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

65. 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

66. BOD of a waste water 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 ml bottle is nearly

- (a) 6.7 ml
- (b) 5.6 ml
- (c) 4.4 ml
- (d) 3.3 ml

67. 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

68. 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

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

- (a) Limnetic
- (b) Estuary
- (c) Prairie
- (d) Reefs

70. 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 photo-thermal 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

71. Acid rain results when gaseous emissions of Sulfur oxides ( $\text{SO}_x$ ) and nitrogen oxides ( $\text{NO}_x$ ) interact with water vapour and

- (a) Moonlight, and are chemically converted to strong acidic compounds such as sulfuric acid ( $\text{H}_2\text{SO}_4$ ) and nitric acid ( $\text{HNO}_3$ )
- (b) Sunlight, and are chemically converted to strong acidic compounds such as sulfuric acid ( $\text{H}_2\text{SO}_4$ ) and nitric acid ( $\text{HNO}_3$ )
- (c) Moonlight, and are chemically converted to weak acidic compounds such as sulfuric acid ( $\text{H}_2\text{SO}_4$ ) and nitric acid ( $\text{HNO}_3$ )
- (d) Sunlight, and are chemically converted to weak acidic compounds such as sulfuric acid ( $\text{H}_2\text{SO}_4$ ) and nitric acid ( $\text{HNO}_3$ )

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

- (a) Peroxy alylnitrate
- (b) Methyl isocyanate
- (c) Potassium cyanide
- (d) Methylmercury

73. 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

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

Number of cows = 5  
Retention time = 20 days  
Temperature =  $30^\circ\text{C}$   
Dry matter consumed = 2 kg/day  
Biogas yield =  $0.24 \text{ m}^3/\text{kg}$   
Efficiency of burner = 60%  
Methane proportion = 0.8  
Heat of combustion of Methane =  $28 \text{ MJ/m}^3$   
Density of dry material in fluid =  $50 \text{ kg/m}^3$

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

75. 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

76. 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

77. 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

78. 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

79. 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

80. 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

81. 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)

82. Which one of the following statement is correct with respect to the 'societal development' ?

- (a) Behaviour grows into habits, habits into tradition and tradition becomes custom
- (b) Customs grow into mores and mores grow into custom
- (c) Behaviours grow into customs and customs grow into traditions
- (d) Folkways grow into tradition and traditions grow into customs

83. Which one of the following statement is correct with respect to 'the convergence theory' on social change ?

- (a) The societal adaptive culture is changing more slowly
- (b) As societies become 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

84. 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 producer selling a distinct product

85. The cheapest method of marketing of securities with the only cost incurred being on sending 'letters of rights' to existing holders is

(a) Public issue through prospectus method

(b) Offer for sale method

(c) Rights issue

(d) Subscription by inside coterie method

86. '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 for purposes of 'stabilization' or 'development'

(d) Deficiency as an instrument of growth

87. Which of the following come under the offerings 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

88. 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

89. 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

90. 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

91. 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

92. 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)  $2r^2(\pi+24)$
- (b)  $r^2(\pi+24)$
- (c)  $2r^2(\pi+36)$
- (d)  $r^2(\pi+36)$

93. 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)  $\frac{9}{10}l$
- (b)  $\frac{7}{8}l$
- (c)  $\frac{6}{7}l$
- (d)  $\frac{5}{6}l$

94. 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  $\frac{l}{2}$  in time  $t_2$  ?

- 1.  $t_2 = \frac{t_1}{2}$
- 2.  $2t_2 > t_1$
- 3.  $t_2 < \frac{t_1}{2}$
- 4. Speed of train is  $\frac{l}{10}$  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

95. 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

96. 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

97. 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 price 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

98. 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 larger circle will be

- (a) 13 cm
- (b) 41 cm
- (c) 52 cm
- (d) 75 cm

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

- (a) Professional offense
- (b) Professional negligence
- (c) Professional misdeed
- (d) Professional malpractice

100. 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 trade mark