

## Part III

### Scholastic Aptitude Test

Time : 90 Minutes

Max Marks : 100

### DIRECTION

1. All the questions of this part are related to the subjects of Scholastic Aptitude Test.
2. Before answering the questions, read these directions very carefully.
3. This part contains 100 questions.
4. Each question carries one mark.
5. Answer to all the questions is essential.
6. The subjects of Scholastic Aptitude Test are divided into three groups, as given below:

SI No.	Title of the group	Subjects covered under the group	Full marks	No. of questions	Marks allotted to each question
(i)	Science Discipline	Physics, Chemistry and Biology	40	40	1 (one)
(ii)	Mathematics	Mathematics	20	20	1 (one)
(iii)	Social Sciences and Humanities	History, Geography Civics and Economics	40	40	1 (one)

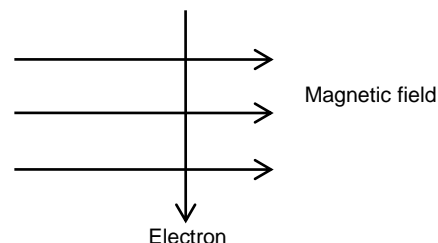
7. The questions are to be answered on the **O.M.R.** Answer Sheet supplied in the Examination Hall.
8. Every question has four alternatives, of which only one is correct.
9. Answer to each question is to be indicated by darkening the circle, by blue or black ball pen only, the number of the correct alternative in the O.M.R. Answer Sheet from amongst the ones given for the corresponding question in the Test (Question) Booklet.

*Please Turn Over the Page and Start Your Work.*

## PHYSICS

- A rod of length 5cm lies along the principal axis of the concave mirror of focal length 15cm in such a way that the end of the closer to the pole is 30cm away from it. Then the length of the image —  
(1) 2.75 cm (2) 3.75 cm  
(3) 4.75 cm (4) None of the above
- If an object moves towards or away a plane with a velocity  $v$  then the image will approach or recede with velocity.  
(1)  $v$  (2)  $2v$   
(3)  $3v$  (4)  $4v$
- The focal length of a concave mirror depends upon  
(1) The distance of the object from the mirror  
(2) The distance of the image from the mirror  
(3) The radius of curvature of the mirror  
(4) None of the above
- The rainbow is formed due to ?  
(1) Refraction (2) Internal Reflection  
(3) Dispersion (4) all the above
- A person cannot see distinctly any object placed beyond 40cm from his eye. What is the power of the lens which will enable him to see distant stars clearly?  
(1) +2.5D (2) -2.5D  
(3) +3.5D (4) -3.5D
- An electrical power station has the power 200 Megawatt (MW), then the electrical energy produced per day will be  
(1) 200 MW –hour (2) 4800 MW – hour  
(3) 4800 MW (4) 4800 joule
- How many electrons flow per second through the filament of 220V and 110W electric bulb?  
(1)  $3.125 \times 10^{18}$  (2)  $3.125 \times 10^{18}$   
(3)  $3.125 \times 10^{18}$  (4)  $3.125 \times 10^{18}$
- The S.I unit of electrical resistivity is?  
(1) ohm (2) m  
(3) ohm  $m^{-1}$  (4) ohm m
- A bulb of 100 Watt, 250 Volt has the resistance of.  
(1) 2500 ohm (2) 625 ohm  
(3) 25 ohm (4) 2.5 ohm
- The first artificial satellite was  
(1) Sputnik – 1 (2) explorer – 1  
(3) Aryabhata (4) Luna – 3

11. A piece of wire of resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is  $R^1$ , then the ratio  $\frac{R}{R^1}$  is
- (1)  $\frac{1}{25}$  (2)  $\frac{1}{5}$   
 (3) 5 (4) 25
12. Magnetic effect of current were discovered by
- (1) Faraday (2) Oersted  
 (3) Joule (4) Ampere
13. An electron enters a magnetic field at right angles to it as shown in Figure. The direction of force acting on electron will be.
- (1) to the right (2) to the left  
 (3) out of the page (4) into the page



## CHEMISTRY

14. 10gm of hydrogen is burnt in the presence of excess oxygen. The mass of water formed is
- (1) 90gm (2) 45gm  
 (3) 10gm (4) 18gm
15. Which information is not conveyed by a balance chemical equation ?
- (1) Physical quantity of reactants and products.  
 (2) Symbols and formula of all the substances involved in a particular reaction  
 (3) No of atoms/molecules of the reactants and products formed.  
 (4) Whether a particular reaction is actually feasible or not.
16. Identify the following type of reaction
- $$2\text{KClO}_3 \xrightarrow[\text{catalyst}]{\text{heat}} 2\text{KCl(s)} + 3\text{O}_2\text{(g)}$$
- (1) It is combination reaction.  
 (2) It is a decomposition reaction and is accompanied by release of heat.  
 (3) It is a Photo Chemical decomposition reaction by release of heat.  
 (4) It is a decomposition reaction and is endothermic in nature.
17. A solution turns red litmus blue, its pH is likely to be
- (1) 1 (2) 4  
 (3) 5 (4) 10
18. A solution reacts with crushed egg shells to give a gas that turns lime water milky. The solution contains -
- (1) NaCl (2) HCl  
 (3) LiCl (4) KCl
19. The pH of a solution of HCl is 4 shows that the molarity of the solution is
- (1) 4.0 M (2) 0.4 M  
 (3) 0.000 M (4) 0.001 M

20. Which of the following pairs will give displacement reactions ?  
(1) NaCl soln and Copper metal (2) MgCl<sub>2</sub> soln and Aluminium metal  
(3) FeSO<sub>4</sub> solution and Silver metal (4) AgNO<sub>3</sub> soln and Copper metal
21. Which of the following metals is present in the anode mud during the electrolytic refining of copper ?  
(1) Sodium (2) Aluminium  
(3) Gold (4) Iron
22. An alloy of Zn and Cu is dissolved in dil HCl. Hydrogen gas is evolved. In this evolution of gas.  
(1) Only zinc reacts with dil HCl  
(2) Only copper reacts with dil HCl  
(3) Both zinc and copper reacts with dil HCl  
(4) Only copper reacts with water
23. 5ml each of cone HCl, HNO<sub>3</sub> and a mixture of conc HCl (15 ml) and conc HNO<sub>3</sub> (5ml) was taken in a separate test tube and labelled as A.B.C. A small piece of metal was put in each test tube, No change occurred in test tube A & B but the metal got dissolved in test tube C. The metal could be  
(1) Al (2) Au  
(3) Cu (4) Na
24. Ethane with the molecular formula C<sub>2</sub>H<sub>6</sub> has -  
(1) 6 Covalent bonds (2) 7 Covalent bonds  
(3) 8 Covalent bonds (4) 9 Covalent bonds
25. Bromine reacts with saturated hydrocarbon at room temperature in the  
(1) Absence of Sun light (2) Presence of Water  
(3) Presence of Sun light (4) Presence of Hydrochloric Acid
26. 14 elements after actinium is called  
(1) Lanthanides (2) Actinides  
(3) d-block elements (4) p-block elements.

## BIOLOGY

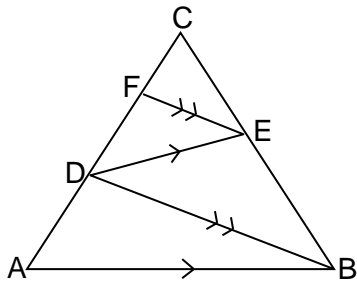
27. The process of photosynthesis is?  
(1) Anabolic (2) Catabolic  
(3) Anabolic and Catabolic (4) None of these
28. The book "Origin of species" belongs to :  
(1) Lamarck (2) Weismann  
(3) Darwin (4) Oparin
29. The wings of butterfly and birds are the example of -  
(1) Vestigial organ (2) Analogous organ  
(3) Homologous organ (4) None of these
30. Sex-chromosome found in male human  
(1) only X (2) only Y  
(3) XX (4) X and Y both
31. Genotypic ratio of Mendel's monohybrid cross is :  
(1) 1 : 3 (2) 3 : 1  
(3) 9 : 3 (4) 1 : 2 : 1

32. The age of fossils is scientifically determined by :  
(1) Radio-carbon dating method (2) by counting the chorosomes  
(3) by counting the annual rings (4) None of these
33. How many ATP is formed due to completed oxidation of 1 molecule of glucose?  
(1) 2 (2) 36  
(3) 38 (4) None of these
34. What is the blood pressure of a healthy person in a normal state?  
(1) 120/80 (2) 80/120  
(3) 160/100 (4) 100/160
35. Male reproductive part of the flower is :  
(1) Gynoecium (2) Corolla  
(3) Calyx (4) Androecium
36. Which enzyme converts protein into peptone found in our food?  
(1) Ptyalin (2) Insulin  
(3) Pepsin (4) None of these
37. The yellow colour of urine is due to the presence of which of the following :  
(1) Salt (2) Glucose  
(3) Urochrome (4) Protein
38. The flow of energy in an ecosystem is :  
(1) Unidirectional (2) Bidirectional  
(3) Multidirectional (4) In any direction
39. Which of the following inherits the characters from generation to generation?  
(1) Gene (2) Sex-chromosome  
(3) Autosome (4) Nucleosome
40. In any ecosystem, fungi and bacteria are called :  
(1) Producers (2) Decomposers  
(3) Consumers (4) None of these

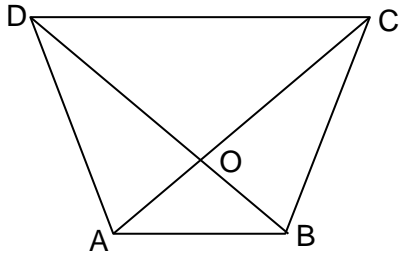
## MATHEMATICS

41. If one of the zeros of the cubic polynomial  $x^3 + ax^2 + bx + c$  is  $-1$ , then the product of the other two zeros is  
(1)  $a - b - 1$  (2)  $b - a - 1$   
(3)  $1 - a + b$  (4)  $1 + a - b$
42. How many numbers lie between 10 to 300, which when divided by 4 leave a remainder 3.  
(1) 71 (2) 72  
(3) 73 (4) 74
43. If  $\cos\theta + \sec\theta = 2$ , then  $\cos^{10}\theta + \sec^{10}\theta = \dots$   
(1) 0 (2) 1  
(3) 2 (4)  $-1$

44. If  $xy + yz + zx = 0$ , then the value of  $\left(\frac{1}{x^2 - yz} + \frac{1}{y^2 - zx} + \frac{1}{z^2 - xy}\right)$
- (1) 3 (2) 0  
(3) 1 (4)  $x + y + z$
45. The sum of  $n$  terms of an AP is given by  $(S_n = 2n^2 + 3n)$  what is the common difference of the AP.
- (1) 3 (2) 4  
(3) 5 (4) 9
46. A boat goes 16 km upstream and 24 km downstream in 6 hours. Also it covers 12 km up stream and 36 km downstream in the same time. Find the speed of the boat in still water ?
- (1) 8 km/h (2) 4 km/h  
(3)  $2\frac{1}{2}$  km/h (4) None of these
47. If  $\sin A + \sin^2 A = 1$ , then  $\cos^2 A + \cos^4 A = \dots\dots$
- (1)  $\frac{1}{2}$  (2) 1  
(3) 2 (4) 4
48.  $\sqrt{\frac{\sec A - \tan A}{\sec A + \tan A}} = ?$
- (1)  $\sec A - \tan A$  (2)  $\sec A + \tan A$   
(3)  $\sec A \cdot \tan A$  (4) None of these
49. If  $\cos 9\alpha = \sin \alpha$  and  $9\alpha < 90^\circ$ , then the value of  $\tan 5\alpha$ ?
- (1)  $\frac{1}{\sqrt{3}}$  (2)  $\sqrt{3}$   
(3) 1 (4) 0
50. If  $x = a \cos 3\theta$  and  $y = b \sin 3\theta$  then  $\left(\frac{x}{a}\right)^{\frac{2}{3}} + \left(\frac{y}{b}\right)^{\frac{2}{3}} = ?$
- (1) 2 (2) a  
(3) b (4) 1
51. In the given figure,  $AB \parallel DE$  and  $BD \parallel EF$ , then

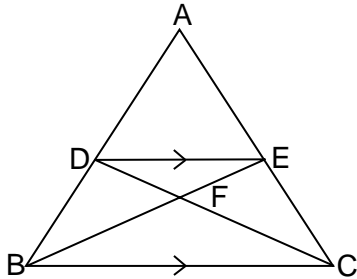


- (1)  $AD^2 = CF \times AC$  (2)  $DC^2 = CF \times AC$   
(3)  $CE^2 = DE \times BF$  (4)  $EF^2 = BD \cdot AB$
52. In the given figure, ABCD is trapezium in which  $AB \parallel CD$  and its diagonals intersect at O. If  $AO = (3x - 1)$  cm,  $OC = (5x - 3)$  cm,  $BO = (2x + 1)$  cm and  $OD = (6x - 5)$  cm, find the value of  $x$ .



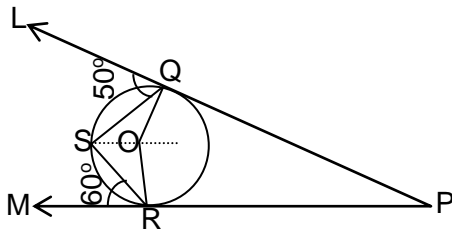
- (1)  $\frac{1}{2}$  (2) 3  
 (3) 4 (4) 2

53. In the given figure,  $DE \parallel BC$  and  $AD:DB = 5:4$ , find the ratio area ( $\triangle DFE$ ) : area ( $\triangle CFB$ ).



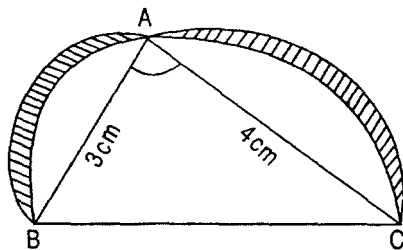
- (1) 5:9 (2) 4:9  
 (3) 25:81 (4) 81:25

54. In the given figure, O is the centre of a circle. PQL and PRM are the tangents at the points QSR respectively and S is a point on the circle such that  $\angle SQL = 50^\circ$  and  $\angle SRM = 60^\circ$ . Then,  $\angle QSR = ?$



- (1)  $40^\circ$  (2)  $50^\circ$   
 (3)  $60^\circ$  (4)  $70^\circ$

55. In the given figure,  $\triangle ABC$  is a right-angled triangle semicircles are drawn on AB, AC and BC as diameters. It is given that  $AB = 3\text{cm}$  and  $AC = 4\text{cm}$ . Find the Area of shaded region.



- (1)  $12\text{cm}^2$  (2)  $6\text{cm}^2$   
 (3)  $9\text{cm}^2$  (4)  $15\text{cm}^2$

56. Water flows through a circular pipe whose internal diameter is 2cm, at the rate of 0.7m/s into a cylindrical tank, the radius of whose base is 40cm. How much will the level of water rise in the tank in half an hour?

- (1) 75cm (2) 75.25cm  
 (3) 78cm (4) 78.75cm

57. The probability that it will rain today is 0.84. What is the probability that it will not rain today?  
(1) 2 (2) 1  
(3) 0.16 (4) 0.61
58. In what ratio does the line  $x - y - z = 0$ , Divide the line segment joining the point A(3, - 1) and B(8, 9)  
(1) 3:2 (2) 2:3  
(3) 3:1 (4) 3:5
59. If points A(a, 0), B(0,b) and C(1, 1) are collinear, then  $\frac{1}{a} + \frac{1}{b} = ?$   
(1) 0 (2) 1  
(3) 2 (4)  $\frac{1}{2}$
60. The mean and mode of a frequency distribution are 28 and 16 respectively, then the median is -  
(1) 23.5 (2) 22  
(3) 24 (4) 24.5

## HISTORY

61. "Indian War of Independence, 1857" was written by -  
(1) R.C. Majumdar (2) S. B. Choudhari  
(3) S.N. Sen (4) V.D. Savarkar
62. Who was the Nawab of Bengal during the "Battle of Plassey"?  
(1) Mir Jafar (2) Mir Kasim  
(3) Siraj-ud-daulla (4) None of these
63. Who said ? "Tilak is the father of Indian unrest?"  
(1) V. Chirol (2) Lousi Fischer  
(3) Web Miller (4) Lord Reading
64. The Mountbatten plan became the basis for  
(1) Continuity of British rule (2) Transfer of Power  
(3) Partition of the Country (4) Solution of communal problems.
65. By whom the "Quit India" resolution was moved in the Bombay Session of the Congress in the year 1942?  
(1) Jawaharlal Nehru (2) Narendra Deo  
(3) Rajendra Prasad (4) J. B. Kripalani
66. Lahore session of Muslim League (1940) was presided over by -  
(1) Liaquat Ali Khan (2) Mohammad Alil Jinnah  
(3) Mohammad Sarfaraj (4) Fatima Jannah
67. The first leader to use the word 'Swaraj' was -  
(1) Bal Gangadhar Tilak (2) Lal Lajpat Rai  
(3) S.C. Bose (4) Mahatma Gandhi
68. The Policy of Liberalisation, Privatisation and Globalisation was announced as Economic Policy by Prime Minister -  
(1) Rajiv Gandhi (2) Vishwanath Pratap Singh  
(3) Narasimha Rao (4) Atal Bihari Vajpayee



69. The Arya Mahila Sabha was founded by :  
 (1) Raj Kumari Amrit Kaur (2) Nellie Sengupta  
 (3) Durgabai Deshmukh (4) Pandita Ramabai
70. The first President of the All India Trade Union Congress was -  
 (1) S.A. Dange (2) Lala Lajpat Rai  
 (3) Z.A. Ahmed (4) N.M. Joshi
71. Who among the following was founder of the “Khudai Khidmatgar Organization?”  
 (1) Khan Abdul Ghaffar Khan (2) Abdur Rab Nishtar  
 (3) Shaukatullah Ansari (4) Khan Adul Quayum Khan
72. In 1526 who established the Mughal Empire in India?  
 (1) Akbar (2) Barbar  
 (3) Humayun (4) Turks
73. Who became the Badashah of India in 1720?  
 (1) Murshid Kuli Khan (2) Paraweza  
 (3) Muhammad Shah (4) Azimushan
74. Martin Luthar was of which country?  
 (1) England (2) Germany  
 (3) France (4) America
75. Which French colony became the part of India in 1954?  
 (1) Kerala (2) Madras  
 (3) Pondicherry (4) Goa

## GEOGRAPHY

76. Assertion (A) : The eastern part of western Ghat receives very little rain.  
 Reason (R) : It lies in a region too hot to allow precipitation.  
 (1) Both A and R are true and R explains A  
 (2) Both A and R are true but R does not explain A  
 (3) A is true and R is false  
 (4) A is false and R is true
77. Arrange the following national parks/ sanctuaries of India from north to south according to their location.  
 I. Periyar II. Kanheri III. Bandipur IV. Gir  
 (1) IV – III – I – II (2) IV – II – III – I  
 (3) IV – I – II – III (4) I – II – III – IV
78. Match List-I (Atomic Power Plant) with List-II (State) and select the correct answer using the codes given below:

List – I (Atomic Power Plant)	List – II (State)
A. Tarapur	I. Tamil Nadu
B. Rana Pratap Sagar	II. Uttar Pradesh
C. Narora	III. Maharashtra
D. Kalpakkam	IV. Rajasthan

- (1) A-IV, B-I, C-II, D-III (2) A-III, B-IV, C-II, D-I  
 (3) A-III, B-II, C-I, D-IV (4) A-III, B-I, C-II, D-IV

79. Match List – I (Railway zone) with List – II (Headquarter) and select the correct answer using the codes given below :

List – I (Railway zone)	List – II (Headquarter)
A. Eastern	I. Secunderabad
B. South Central	II. Kolkata
C. North Western	III. Allahabad
D. North Central	IV. Jaipur

(1) A-II, B-I, C-III, D-IV

(2) A-II, B-I, C-IV, D-III

(3) A-II, B-III, C-IV, D-I

(4) A-II, B-IV, C-III, D-I

80. Assertion (A) : There is a clockwise circulation of ocean currents in the northern hemisphere.  
Reason (R) : This is in the conformity with Ferrel's Law.

(1) Both A and R are true and R explains A

(2) Both A and R are true but R does not explain A

(3) A is true and R is false

(4) A is false and R is true

81. Which of the following are wrongly matched?

- A. Tropic of Cancer – 23.5° N latitude  
B. Tropic of Capricorn – 66.5° N latitude  
C. Indian Standard Time – 82° E longitude  
D. Antarctic Circle – 6.5° S latitude

(1) only A

(2) A and B

(3) B and C

(4) A, B and D

82. Match list – I (Thermal Power Plant) with List – II (State) and select the correct answer using the codes given below :

List – I (Thermal Power Plant)	List – II (State)
A. Ramagundam	I. Odisha
B. Korba	II. Bihar
C. Jharsuguda	III. Andhra Pradesh
D. Barauni	IV. Chhatisgarh

(1) A-III, B-I, C-IV, D-II

(2) A-III, B-IV, C-I, D-II

(3) A-III, B-IV, C-II, D-I

(4) A-I, B-II, C-III, D-IV

83. Which river flows through a narrow valley between the Vindhya and Satpura ranges ?

(1) Narmada

(2) Tapi

(3) Both of these

(4) None of these

84. Match List – I (River Valley Project) with List – II (River) and select the correct answer using the codes given below :

List – I (River Valley Project)	List – II (River)
A. Hirakund	I. Betwa
B. Ukai	II. Sutlej
C. Matatila	III. Mahanadi
D. Bhakhra Nangal	IV. Tapi

(1) A-III, B-IV, C-II, D-I

(2) A-III, B-IV, C-I, D-II

(3) A-III, B-II, C-IV, D-I

(4) A-I, B-II, C-III, D-IV

85. Copper – Gold – Iron – Coal are related to :  
 (1) Kolar – Khetri – Jharia – Kundremukh (2) Kolar – Kudremukh – Khetri - Jharia  
 (3) Khetri – Kolar – Kudremukh - Jharia (4) Khetri – Kolar – Jharia - Kundremukh
86. Match List – I (Hydroelectric Project) with List – II (State) and select the correct answer using the codes given below :

List – I (Hydroelectric Project)	List – II (State)
A. Koyna	I. Kerala
B. Pong	II. Jammu & Kashmir
C. Idukki	III. Maharashtra
D. Salal	IV. Himachal Pradesh

- (1) A-III, B-I, C-IV, D-II (2) A-III, B-IV, C-III, D-I  
 (3) A-III, B-IV, C-I, D-II (4) A-I, B-II, C-III, D-IV

87. Assertion (A) : Sugarcane is not produced in all the States of India.  
 Reason (R) : Geographical conditions in the States are different.  
 (1) Both A and R are true and R explains A  
 (2) Both A and R are true but R does not explain A  
 (3) A is true and R is false  
 (4) A is false and R is true

88. Which of the following soils is more fertile?  
 (1) Bangar (2) Khadar  
 (3) Laterite (4) Red Soil

89. The Ganges of the South is  
 (1) Kaveri (2) Godavari  
 (3) Narmada (4) Krishna

90. The origin of Himalaya was in which era?  
 (1) Tertiary (2) Miocene  
 (3) Paleozoic (4) Pleistocene

## CIVICS

91. Who was Chairman of the committee which proposed Democratic decentralisation and Panchayati Raj?  
 (1) K. M. Pannikar (2) H. N. Kunjru  
 (3) Mahatma Gandhi (4) Balbant Rai Mehta
92. Which one of the following not a constitutional body?  
 (1) Union Public Service Commission (2) State Public Service Commission  
 (3) Finance Commission (4) NITI Commission
93. Right to vote in India is a  
 (1) Fundamental Right (2) Constitutional Right  
 (3) Natural Right (4) Legal Right

94. The Chairman of the Rajya Sabha is -  
(1) Appointed by the President  
(2) Elected by Parliament  
(3) The Vice-President is ex-officio Chairman  
(4) Elected by the members of the Council of States
95. Who among the following is the head of Indian Republic  
(1) President of India  
(2) Prime Minister of India  
(3) Cabinet  
(4) Political head alongwith Council of Ministers

## ECONOMICS

96. NABARD came into existence in the year -  
(1) 1979 (2) 1980  
(3) 1981 (4) 1982
97. Major Banks (14) were nationalized in the year -  
(1) 1968 (2) 1969  
(3) 1970 (4) 1971
98. Which one of the following is not a tax/duty levied by the Government of India ?  
(1) Service Tax (2) Education Tax  
(3) Custom Duty (4) Toll Tax
99. Government of India enacted Consumer Protection Act in the year  
(1) 1951 (2) 1975  
(3) 1990 (4) 1986
100. The Indian Economy is a  
(1) Liberal Economy (2) Socialist Economy  
(3) Mixed Economy (4) None of these